Sydney Metro - WSA - SSTOM - OHE Station – Concrete Works OOH and Batch Plant - Detailed Noise and Vibration Impact Statement

SMWSASSM-PLD-OHE-SN150-NV-RPT-000004

Parklife Metro D&C

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0	Sam Demasi	15/05/2024	Issue for EPL licence variation application and Sydney Metro review	Colm Kennedy
1	Sam Demasi	05/06/2024	Issue following SM and ER review. Note scenarios 1, 2 and 3 described in this DNVIS will be finalised in the next revision and prior to implementation.	Colm Kennedy

Signature	

Detailed Noise and Vibration Impact Statement

Sydney Metro Western Sydney Airport SSTOM Package

OHE Batch Plant and Concreting OOH - EPL Variation

Report Number 21239.1.10

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21239.1.10	Revision 1	5 June 2024	Sam Demasi Monica Saralertsophon	Sam Demasi	Sam Demasi
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This report in its finalised version has been prepared, checked, and authorised by suitably qualified and experienced personnel from VMS Australia Pty Ltd, who are members of the Australian Acoustical Society (AAS). Draft versions of this report may not be subject to this qualification.

This Report by VMS Australia Pty Ltd is prepared for the Client listed above and is based on the objective, scope, conditions and limitations as agreed. The Report presents only the information that VMS Australia Pty Ltd believes, in its professional opinion, is relevant and necessary to describe the issues involved. The Report should not be used for anything other than the intended purpose. All surveys, forecasts, projections, and recommendations contained in or associated with this report are made in good faith and on the basis of information supplied to VMS Australia Pty Ltd at the date of this report, and upon which VMS Australia Pty Ltd relied.

VMS Australia Pty Ltd does not accept any liability or responsibility to any party with respect to the information and opinions contained in this report.

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APPENDIX

1 Introduction

The Sydney Metro Western Sydney Airport (SMWSA) Environmental Impact Assessment (EIS) was prepared in October 2020, which assessed the impacts of the construction (and operation) of the development. Approval for the development of the SMWSA project occurred on the 23 July 2021 (Mod 1 approved 14 April 2022) with conditions as outlined in the SMWSA - Conditions of Approval - State Significant Infrastructure (SSI) 10051. Chapter 10 of the EIS included a summary of the Noise and Vibration assessment, with the complete assessment provided in Technical Paper 2.

The SMWSA project is made up of three major contract packages. In December 2022 the third contract was awarded to Parklife Metro (PLM) who will deliver approximately 23 kilometres of railway track including six new stations between St Marys and the new Aerotropolis, 12 new metro trains, core rail systems and the stabling and maintenance facility to be built at Orchard Hills.

After completion of these works, PLM will also operate and maintain the SMWSA line for 15 years after it becomes operational.

Specific acoustic terminology is used in this report. An explanation of common acoustic terms is provided in **Appendix A**.

2 Overall Project Description

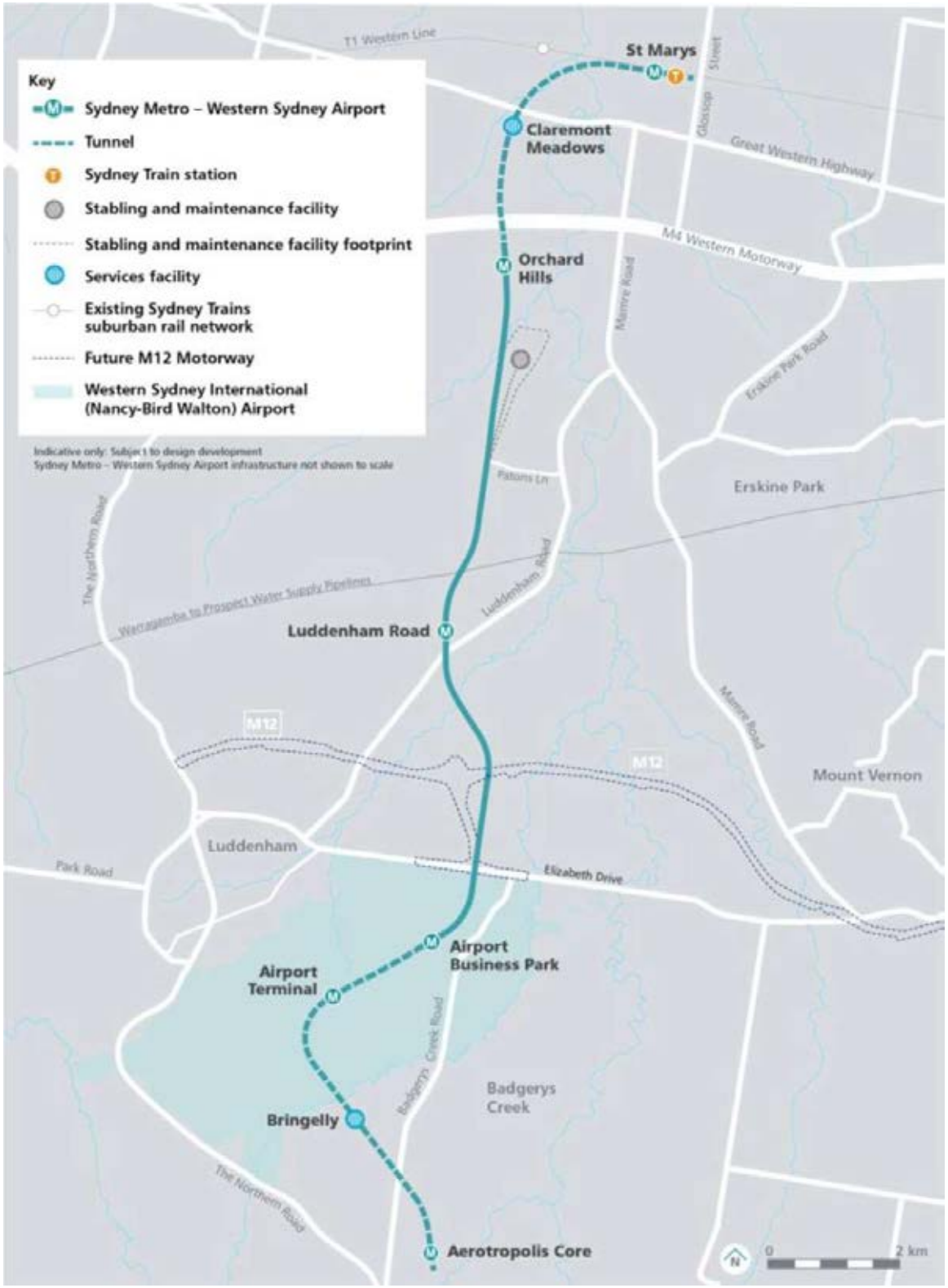
In terms of construction works, the SSTOM Works scope as part of the SMWSA Project includes:

- installation of tracks, signalling, mechanical and electrical systems,
- construction of a Stabling and Maintenance Facility (SMF) at Orchard Hills,
- construction of the lower chamber of Bringelly shaft, along with capping and backfill,
- construction of the lower chamber of Claremont Meadows shaft, along with capping and backfill, and
- construction of six stations, including:
    - a new metro station connecting to, and providing an interchange with, the T1 Western Line (part of the existing Sydney Trains suburban rail network) at St Marys,
    - two new metro stations between the T1 Western Line and Western Sydney International; one at Orchard Hills and one at Luddenham within the Northern Gateway Precinct,
    - two new metro stations within the Western Sydney Airport site (WSA); one at the Airport Terminal and one at the Airport Business Park, both of which are located on Airport land, and
    - a new metro station within the Aerotropolis Core precinct, south of WSA.

Construction works relating to SSTOM are expected to be completed during the third quarter of 2026, with commissioning and testing completed by the end of 2026.

A site plan showing the extent of the entire project is shown in **Figure 1**.

Figure 1 Overall Project Site Plan



Source: Noise and Vibration Management Sub-plan.

2.1 Scope of this Detailed Noise and Vibration Impact Statement

This detailed noise and vibration impact statement (DNVIS) includes three main work activities as shown in **Table 1** which also includes the hours proposed for the works and the indicative schedule for the works.

All three of these activities are proposed to occur on-site and outside of standard construction hours.

Work areas where these activities are proposed to occur are presented in **Figure 2** to **Figure 3**.

These works will occur at the Orchard Hill Station site (OHE).

Table 1 DNVIS Summary of Work Activities

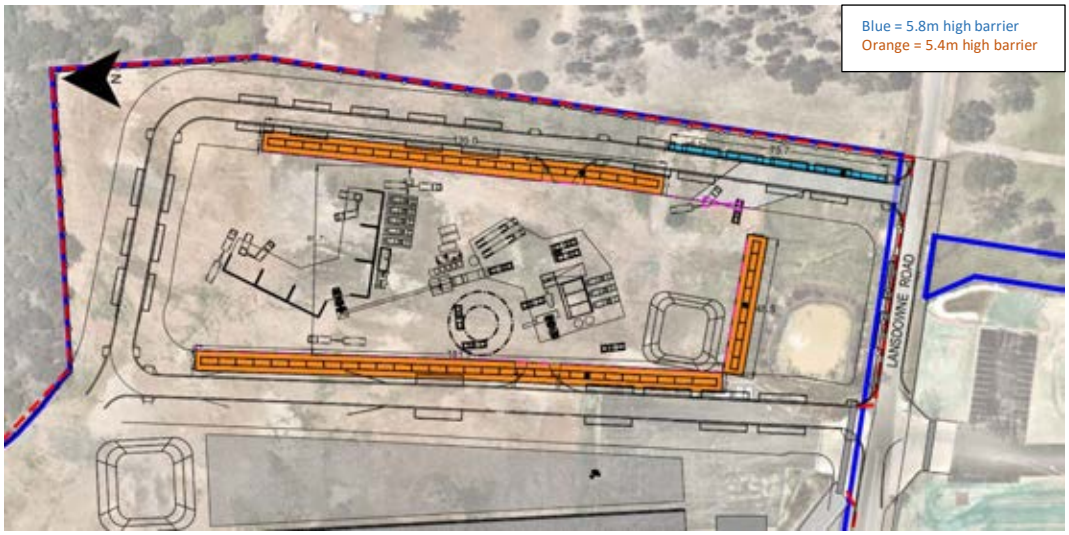
Work Activity	Proposed Hours[1]	Indicative Work Scheduling
Concrete Batching Plant Operation During Construction	Monday to Sunday - OOH[2]	July 2024 to end of 2026[3].
Concrete Works	Monday to Friday - 6pm to 10pm Saturday - 1pm to 4pm	June 2024 to April 2026.
Use of Site Office and Amenities	Monday to Sunday - OOH[2]	June 2024 to April 2026.

Note 1: No works currently proposed on Public Holidays.

Note 2: Concrete batch plant use already approval for Standard Hours.

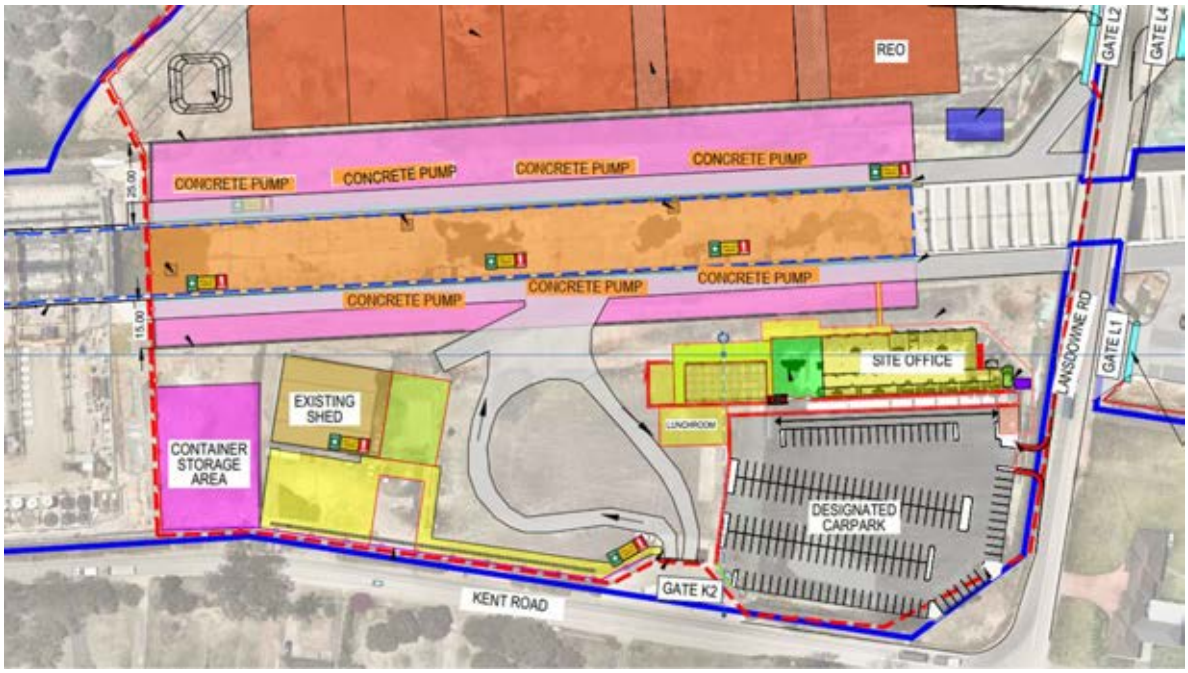
Note 3: Until completion of works, currently estimated to be end of 2026.

Figure 2 Concrete Batching Plant Area



Source: PLM

Figure 3 Concreting Area and Site Office + Amenities



Source: PLM.

2.2 Project Compliance Management

The two primary approval documents required for the construction of SSTOM are:

- SSI 10051.
- Environment Protection License (EPL) 21807.

Considering the relevant aspects of the above documents, compliance is summarised in **Table 2** which also includes relevant Revised Environmental Mitigation Measures (REMMs).

In addition to the above, the following documents were referenced in the preparation of this DNVIS:

- Department of Environment & Climate Change NSW (DEC - now the EPA) - Interim Construction Noise Guideline (ICNG).
- PLM - Construction Environmental Management Plan (CEMP).
- PLM - Construction Traffic Management Plan - Orchard Hills Station (CTMP).
- PLM - Noise and Vibration Management Sub-Plan (NVMP).
- Sydney Metro - Construction Environmental Management Framework (CEMF).
- SMWSA - Construction Noise and Vibration Standard (CNVS).
- SMWSA - Submissions Report.
- Transport for NSW (TfNSW) - Construction Noise and Vibration Strategy (Strategy).
- SMWSA - Community Communications Strategy (CCS).
- EMM - Bringelly Concrete Batching Plant Production Increase - Noise Impact Assessment - Ref: E211034, Version 2, dated 11 August 2022 (Bringelly NIA).

Table 2 Project Compliance Management Summary

ID	Condition	DNVIS Reference
SMWSA - Conditions of Approval - SSI 10051 - Noise and Vibration		
E37	A detailed land use survey must be undertaken to confirm sensitive land use(s) (including critical working areas such as operating theatres and precision laboratories) potentially exposed to construction noise and vibration and construction ground-borne noise. The survey may be undertaken on a progressive basis but must be undertaken in any one area before the commencement of work which generates construction noise, vibration or ground-borne noise in that area. The results of the survey must be included in the **Detailed Noise and Vibration Impact Statements** required under **Condition E47.**	**Section 3.2** **Appendix B**
E38	Work must only be undertaken during the following hours: a) 7:00am to 6:00pm Mondays to Fridays, inclusive; b) 8:00am to 1:00pm Saturdays; and c) at no time on Sundays or public holidays.	OOH works to take place as permitted by an EPL.
E39	Except as permitted by an EPL or approved in accordance with the Out-of-Hours Works Protocol required by **Condition E42**, highly noise intensive work that result in an exceedance of the applicable NML at the same receiver must only be undertaken: a) between the hours of 8:00am to 6:00pm Monday to Friday; b) between the hours of 8:00am to 1:00pm Saturday; and c) if continuously, then not exceeding three (3) hours, with a minimum cessation of work of not less than one (1) hour. For the purposes of this condition, 'continuously' includes any period during which there is less than one (1) hour between ceasing and recommencing any of the work.	NA to this DNVIS. Highly noise intensive work not proposed.
E40	This approval does not permit blasting.	NA to this DNVIS. Blasting not proposed.
E41	Variation to Work Hours: Notwithstanding Conditions E38 and E39 work may be undertaken outside the hours specified in the following circumstances: (a) Safety and Emergencies, including: (i) for the delivery of materials required by the NSW Police Force or other authority for safety reasons; (c) By Approval, including: (i) where different construction hours are permitted or required under an EPL in force in respect of the CSSI;	Condition E41(c)(i) applies as this DNVIS is intended to support approval of variation of work hours via EPL.

ID	Condition	DNVIS Reference
E42	Out-of-Hours Work Protocol - Work not subject to an EPL An Out-of-Hours Work Protocol must be prepared to identify a process for the consideration, management and approval of work (not subject to an EPL) that is outside the hours defined in Conditions E38 and E39. The Protocol must be approved by the Planning Secretary before commencement of the out-of-hours work. The Protocol must be prepared in consultation with the ER. The Protocol must provide: (a) justification for why out-of-hours work need to occur; (b) identification of low and high-risk activities and an approval process that considers the risk of activities, proposed mitigation, management, and coordination, including where: (i) the ER reviews all proposed out-of-hours activities and confirms their risk levels; (ii) low risk activities that can be approved by the ER; and (iii) high risk activities that are approved by the Planning Secretary; (c) a process for the consideration of out-of-hours work against the relevant NML and vibration criteria; (d) a process for selecting and implementing mitigation measures for residual impacts in consultation with the community at each affected location, including respite periods consistent with the requirements of Condition E56. The measures must take into account the predicted noise levels and the likely frequency and duration of the out-of-hours works that sensitive land user(s) would be exposed to, including the number of noise awakening events; (e) procedures to facilitate the coordination of out-of-hours work including those approved by an EPL or undertaken by a third party, to ensure appropriate respite is provided; and (f) notification arrangements for affected receivers for all approved out-of-hours works and notification to the Planning Secretary of approved low risk out-of-hours works. This condition does not apply if the requirements of Condition E41 are met. Note: Out-of-hours work is any work that occurs outside the construction hours identified in Condition E38 and E39.	N/A to this DNVIS.
E43	Mitigation measures must be implemented with the aim of achieving the following construction noise management levels and vibration criteria: a) construction 'Noise affected' noise management levels established using the Interim Construction Noise Guideline (DECC, 2009); b) preferred vibration criteria established using the Assessing vibration: a technical guideline (DEC, 2006) (for human exposure); c) Australian Standard AS 2187.2 - 2006 "Explosives - Storage and Use - Use of Explosives" (for human exposure); d) BS 7385 Part 2-1993 "Evaluation and measurement for vibration in buildings Part 2" as they are "applicable to Australian conditions"; and e) the vibration limits set out in the German Standard DIN 4150-3: Structural Vibration - effects of vibration on structures (for structural damage for structurally unsound heritage items). Any work identified as exceeding the noise management levels and / or vibration criteria must be managed in accordance with the Noise and Vibration CEMP Sub-plan. Note: The ICNG identifies 'particularly annoying' activities that require the addition of 5 dB(A) to the predicted level before comparing to the construction Noise Management Level.	**Section 7**
E44	All reasonable and feasible mitigation measures must be applied when the following residential ground-borne noise levels are exceeded: (a) evening (6:00pm to 10:00pm) - internal $L_{Aeq(15\ minute)}$: 40 dB(A); and (b) night (10:00pm to 7:00am) - internal $L_{Aeq(15\ minute)}$: 35 dB(A). The mitigation measures must be outlined in the Noise and Vibration CEMP Sub-plan, including in any Out-of-Hours Work Protocol, required by Condition E42.	Not triggered. Ground-borne noise negligible.
E45	Noise generating work in the vicinity of potentially-affected community, religious, educational institutions and noise and vibration-sensitive businesses and critical working areas (such as theatres, laboratories, and operating theatres) resulting in noise levels above the NMLs must not be time tabled with sensitive periods, unless other reasonable arrangements with the affected institutions are made at no cost to the affected institution.	Not triggered. NML for residential only exceeded.

ID	Condition	DNVIS Reference
E46	Industry best practice construction methods must be implemented where reasonably practicable to ensure that noise levels are minimised around sensitive land user(s). Practices must include, but are not limited to: a)use of regularly serviced low sound power equipment; b)at source control, temporary noise barriers (including the arrangement of plant and equipment) around noisy equipment and activities such as rock hammering and concrete cutting; c)use of non-tonal reversing alarms; and d)use of alternative construction and demolition techniques.	**Section 7**
E47	**Detailed Noise and Vibration Impact Statements** (**DNVIS**) must be prepared for any work that may exceed the NMLs, vibration criteria and / or ground-borne noise levels specified in **Conditions E43** and **E44** at any residence outside construction hours identified in **Condition E38**, or where receivers will be highly noise affected or subject to vibration levels above those otherwise determined as appropriate by a suitably qualified structural engineer under **Condition E87**. The **DNVIS** must include specific mitigation measures identified through consultation with affected sensitive land user(s) and the mitigation measures must be implemented for the duration of the works. A copy of the **DNVIS** must be provided to the ER before the commencement of the associated works. The Planning Secretary and the EPA may request a copy(ies) of the **DNVIS**.	This document.
E48	Owners and occupiers of properties at risk of exceeding the screening criteria for cosmetic damage must be notified before works that generate vibration commences in the vicinity of those properties. If the potential exceedance is to occur more than once or extend over a period of 24 hours, owners and occupiers are to be provided a schedule of potential exceedances on a monthly basis for the duration of the potential exceedances, unless otherwise agreed by the owner and occupier. These properties must be identified and considered in the Noise and Vibration CEMP Sub-plan.	Not triggered. No properties are at risk of exceeding the screening criteria for cosmetic damage.
E49	Where sensitive land use(s) are identified in Appendix B as exceeding the highly noise affected criteria during typical case construction, mitigation measures must be implemented with the objective of reducing typical case construction noise below the highly noise affected criteria at each relevant sensitive landuse(s). Activities that would exceed highly noise affected criteria during typical case construction must not commerce until the measures identified in this condition have been implemented, unless otherwise agreed with the Planning Secretary. Note: Mitigation measures may include path barrier controls such as acoustic sheds and/or noise walls, at-property treatment, or a combination of path and at-property treatment.	Highly noise affected not triggered.
E50	For all construction sites where acoustic sheds are installed, the sheds must be designed, constructed and operated to minimise noise emissions. This would include the following considerations: (a) all significant noise producing equipment that would be used during the night-time would be inside the sheds, where feasible and reasonable; (b) noise generating ventilation systems such as compressors, scrubbers, etc, would be located inside the sheds and external air intake/discharge ports would be appropriately acoustically treated; and (c) the doors of acoustic sheds would be kept closed during the night-time period. Where night-time vehicle access is required at sites with nearby residences, the shed entrances would be designed and constructed to minimise noise breakout.	N/A to this DNVIS. Acoustic sheds not proposed.
E51	Where Condition E49 determines that at-property treatment (temporary or permanent) is the appropriate measure to reduce noise impacts, this at-property treatment must be offered to landowners of residential properties for habitable living spaces, unless other mitigation or management measures are agreed to by the landowner. Landowners must be advised of the range of options that can be installed at or in their property and given a choice as to which of these they agree to have installed. A copy of all guidelines and procedures that will be used to determine at-property treatment at their residence must be provided to the landowner.	Not triggered.
E52	Any offer for at-property treatment or the application of other noise mitigation measures in accordance with Condition E51 does not expire until the noise impacts specified in Condition E49 affecting that property are completed, even if the landowner initially refuses the offer. Note: If an offer has been made but is not accepted, this does not preclude the commencement of construction under Condition E49.	Not triggered.

ID	Condition	DNVIS Reference
E53	The implementation of at-property treatment does not preclude the application of other noise and vibration mitigation and management measures including temporary and long term accommodation.	Not triggered.
E54	Vibration testing must be conducted during vibration generating activities that have the potential to impact on Heritage items to verify minimum working distances to prevent cosmetic damage. In the event that the vibration testing and attended monitoring shows that the preferred values for vibration are likely to be exceeded, the Proponent must review the construction methodology and, if necessary, implement additional mitigation measures. Such measures must include, but not be limited to, review or modification of excavation techniques.	NA to this DNVIS. No vibration intensive works.
E55	The Proponent must seek the advice of a heritage specialist on methods and locations for installing equipment used for vibration, movement and noise monitoring at Heritage items.	Not triggered.
E56	All work undertaken for the delivery of the CSSI, including those undertaken by third parties (such as utility relocations), must be coordinated to ensure respite periods are provided. The Proponent must: (a) reschedule any work to provide respite to impacted noise sensitive land use(s) so that the respite is achieved in accordance with Condition E57; or (b) consider the provision of alternative respite or mitigation to impacted noise sensitive land use(s); and (c) provide documentary evidence to the ER in support of any decision made by the Proponent in relation to respite or mitigation. The consideration of respite must also include all other approved Critical SSI, SSI and SSD projects which may cause cumulative and / or consecutive impacts at receivers affected by the delivery of the CSSI.	**Section 7**
E57	In order to undertake out-of-hours work outside the work hours specified under Condition E38, appropriate respite periods for the out-of-hours work must be identified in consultation with the community at each affected location on a regular basis. This consultation must include (but not be limited to) providing the community with: (a) a progressive schedule for periods no less than three (3) months, of likely out-of-hours work; (b) a description of the potential work, location and duration of the out-of-hours work; (c) the noise characteristics and likely noise levels of the work; and (d) likely mitigation and management measures which aim to achieve the relevant NMLs under Condition E43 (including the circumstances of when respite or relocation offers will be available and details about how the affected community can access these offers). The outcomes of the community consultation, the identified respite periods and the scheduling of the likely out-of-hour work must be provided to the ER, EPA and the Planning Secretary prior to the out-of-hours work commencing. Note: Respite periods can be any combination of days or hours where out-of-hours work would not be more than 5 dB(A) above the RBL at any residence.	As notified by PLM, consultation will be undertaken in accordance with this Condition, and in accordance with the EPL. Furthermore, E57 Report will be provided to the ER as required.
EPL - 21807		
L3.1	The licensee must minimise noise and vibration impacts at residences and other sensitive land uses. To meet the requirements of this condition the licensee must: a) implement the guidance in the Interim Construction Noise Guideline (DEC, 2009) and the Assessing Vibration: a technical guideline (DEC, 2006); b) implement all reasonable and feasible measures to minimise noise impacts in accordance with the Interim Construction Noise Guideline (DEC, 2009); and c) implement vibration mitigation in accordance with the Assessing Vibration: a Technical Guideline (DEC, 2006). In this condition, 'reasonable' and 'feasible', in relation to noise management, have the same meaning as defined in the Interim Construction Noise Guideline (DEC, 2009).	**Section 7**
L3.2	When construction activities include 'High Noise Impact Activities and Works' as defined in the special dictionary in this licence, quantitative construction noise assessments must apply a +5dB correction to the measured or predicted level of construction noise at the nearest Noise Sensitive Receiver location before assessment against the Interim Construction Noise Guideline (DECC, 2009) noise management levels.	Not triggered. No High Noise Impact Activities and Works are planned.

ID	Condition	DNVIS Reference
L4.1	All blasting activities are prohibited on the licensed premises.	Not triggered. Blasting not proposed.
L5.1	Standard construction hours Unless permitted by another condition of this licence, works and activities must: a) only be undertaken between the hours of 7:00am and 6:00pm Monday to Friday; b) only be undertaken between the hours of 8:00am and 1:00pm Saturday; and c) not be undertaken on Sundays or Public Holidays.	This DNVIS is intended to support variation to EPL regarding OOH works relating to concreting and to batch plant.
L5.2	High Noise Impact Activities and Works Unless permitted by another condition of this licence, any High Noise Impact Activities and Works that exceed the applicable Noise Management Level (NML) at a Noise Sensitive Receiver must only be undertaken: a) between 8:00am and 6:00pm Monday to Friday; b) between 8:00am and 1:00pm Saturday; and c) if high noise impact works are to be conducted continuously and the location of the works means that it is likely to impact the same receivers, then the works must be conducted in continuous blocks of no more than 3-hours, with at least a 1-hour respite between each block of continuous high noise impact work; except as expressly permitted by another condition of this licence. Note: For the purposes of this condition 'continuous' includes any period where there is a less than 1-hour respite between ceasing and recommencing of any work that is subject to this condition.	Not triggered. No High Noise Impact Activities and Works are planned.
L5.3	Exemptions to standard construction hours for low noise impact works Works and activities may be carried on outside of standard construction hours specified in condition L5.1 if the works and activities do not cause, when assessed at the boundary of the most affected Noise Sensitive Receiver: a) $L_{Aeq(15\ minute)}$ noise levels greater than 5dB above the day, evening and night Rating Background Level (RBL) as applicable; b) L_{Amax} noise levels greater than 15dB above the night RBL for night works; c) the preferred continuous or impulsive vibration values greater than those for human exposure to vibration, set out for residences in Table 2.2 in Assessing Vibration: a technical guideline (DEC, 2006); and d) the preferred intermittent vibration values greater than those for human exposure to vibration, set out for residences in Table 2.4 in Assessing Vibration: a technical guideline (DEC, 2006). For the purposes of this condition, the RBLs are those contained in an environmental assessment for the activities subject to this licence prepared under the Environmental Planning and Assessment Act 1979. Alternatively, the licensee may use another RBL determined in accordance with the Noise Policy for Industry (EPA, 2017) and provided to the EPA prior to carrying out any works or activities under this condition. The notification requirements under condition L5.4 do not apply to this condition.	Not triggered.

ID	Condition	DNVIS Reference
L5.4	Works outside of standard construction hours - Notification The licensee must notify potentially affected Noise Sensitive Receivers of works outside of standard construction hours unless notification under this condition is not required as specified in another condition of this licence. a) The notification must: i. be given not less than 5 calendar days and not more than 14 calendar days before those works are to be undertaken, unless otherwise agreed with the affected community and notified to the EPA; ii. be undertaken by letterbox drop, email, text message or other targeted and equivalent method; and iii. be detailed on the project website or other relevant website notified to the EPA. b) The notification required by this Condition must: i. clearly outline the reason that the work is required to be undertaken outside the hours specified in condition L5.1; ii. include a diagram that clearly identifies the location of the proposed works in relation to nearby cross streets and local landmarks; iii. include details of the date, timing and relevant time restrictions that apply to the proposed works; iv. clearly outline in plain English, the location, nature, scope and duration of the proposed works; v. detail the expected noise impact of the works on Noise Sensitive Receivers; vi. clearly state how complaints may be made and additional information obtained; vii. include the number of the telephone complaints line required by condition M5.1, an after hours contact phone number specific to the works undertaken outside the hours specified in condition L5.1, and the project website address; and viii. include consideration of culturally and linguistically diverse Noise Sensitive Receivers where required.	**Section 7**
L5.5	Exemptions to standard construction hours in exceptional circumstances a) The licensee may undertake works and activities outside of standard construction hours specified in condition L5.1 for: i. emergency works required to avoid the loss of life or property, or to prevent material harm to the environment; and ii. the delivery of oversized plant, structures or materials determined by the police or other authorised authorities to require special arrangements to transport along public roads. b) The licensee must, on becoming aware of the need to undertake emergency works under this condition notify the EPA's Environment Line as soon as practicable and submit a report to the EPA by 4:00pm on the next business day after the emergency works commenced that describes: i. the cause, time and duration of the emergency; ii. action taken by or on behalf of the licensee in relation to the emergency; and iii. details of any measures taken or proposed to be taken by the licensee to prevent or mitigate against a recurrence of the emergency. For the purposes of this condition, 'material harm to the environment' has the same meaning as in section 147 of the POEO Act. Emergency works do not require a notification under condition L5.4.	N/A to this DNVIS.
L5.6	The licensee must make all reasonable and feasible efforts to coordinate all works outside of standard construction hours with any neighbouring concurrent construction works that have the potential to impact the same Noise Sensitive Receivers. The licensee must ensure Respite Periods are being achieved as much as is reasonably practicable.	**Section 7**
L5.7	Condition L5.6 does not apply to low impact noise work permitted by condition L5.3 or emergency works permitted by L5.5 of this licence.	Noted.

ID	Condition	DNVIS Reference
L5.8	Works outside of standard construction hours Under this condition, works and activities may be undertaken outside of standard construction hours specified in Condition L5.1 and L5.2, but only if they are required in relation to one or more of the following: a) carrying on those works and activities during standard construction hours would result in a high risk to construction personnel or public safety, based on a risk assessment carried out in accordance with AS/NZS ISO 31000:2018 "Risk Management"; b) the Relevant Road Network Operator has advised the licensee in writing that carrying out the works and activities during standard construction hours would result in a high risk to road network operational performance; c) a relevant utility service operator has advised the licensee in writing that carrying out the works and activities during standard construction hours would result in a high risk to the operation and integrity of the utility network; d) the TfNSW Transport Management Centre (or other road authority) have refused to issue a road occupancy licence during standard construction hours; or e) Sydney Trains (or other rail authority) requires a rail possession for the activities to be performed outside of standard construction hours.	N/A to this DNVIS.

ID	Condition	DNVIS Reference
L5.9	Works outside of standard construction hours - Regulatory Requirements In undertaking any works and activities outside of standard construction hours under condition L5.8, the licensee must comply with the following: a) Prepare a construction noise and vibration impact assessment in accordance with the Interim Construction Noise Guideline (DEC, 2009) that is to include: i. a description of the proposed works and activities outside of standard construction hours; ii. predictions of $L_{Aeq(15\ minute)}$ dB noise levels at noise sensitive receivers from these works and activities, where noise levels are predicted to be greater than those permitted under condition L5.3; and iii. a monitoring plan to validate the noise predictions, based on monitoring at the boundary of representative sensitive receivers during noise generating activities that are representative of the works and activities, including during the period/s predicted to have the highest noise level impacts. b) Undertake noise monitoring in accordance with the monitoring plan required by condition L5.9(a)(iii). c) Only undertake activities between the hours of 6:00pm on Mondays, Tuesdays, Wednesdays, Thursdays, Fridays and 7:00am the following day (unless permitted by another condition of this licence). d) Activities are not to be undertaken between the hours of 6:00pm on Saturdays, Sundays or Public Holidays and 7:00am the following day (unless permitted by another condition of this licence). e) Ensure that works and activities do not result in noise levels exceeding those specified in condition L5.3 at the same noise sensitive receivers (unless specified in another condition of this licence) on more than: i. 2 consecutive evenings and/or nights at any time; and ii. 3 evenings and/or nights per week; and iii. 10 evenings and/or nights per month. f) Undertake any high noise impact works before 12:00am (midnight) where reasonable and feasible. g) Where high noise impact activities are undertaken, the respite provisions as per the requirements of condition L5.2(c) do not apply provided that all High Noise Impact Activities and Works are undertaken prior to 12:00am (midnight). h) Where high noise impact activities are undertaken after 12:00am (midnight), the respite provisions in condition L5.2(c) apply. i) Upon request of an authorised officer, the licensee must provide within 5 business day: i. the construction noise and vibration impact assessment required by condition L5.9(a); ii. noise monitoring results required by condition L5.9(b); iii. written evidence demonstrating the works are necessary and permitted under condition L5.8; and/or iv. any other relevant information or records requested by the EPA. j) the notification requirements under condition L5.4 apply to this condition.	This DNVIS (where appropriate) is intended to support a variation application to the EPL regarding OOH Concreting Works. PLM will ensure compliance with EPL, including any variations resulting from this application.

ID	Condition	DNVIS Reference
L5.10	St Marys Station - Out of Hours Concrete Works Concrete works associated with station box construction at St Marys station, including concrete pouring, finishing and cleaning, are permitted to be undertaken outside of standard construction hours specified in L5.1 provided that: a) Works are required to achieve compliance with overarching project technical requirements, b) Works had already begun within a reasonable time prior to end of standard construction hours, c) Out of Hours (OOH) works are undertaken from 6pm to 10pm, Monday to Friday and 1pm to 4pm on Saturday, d) Station box base slab and wall concreting activities (e.g. using concrete pump, vibrators, concrete trucks, etc) must be completed before 9pm on Monday to Friday, e) Station box base slab and wall concreting activities are permitted to occur up to 9pm Monday to Friday a total of 12 times, f) All other concreting activities (e.g. using concrete pump, vibrators, concrete trucks, etc) must be completed before 8pm on Monday to Friday, g) Concrete finishing works (e.g. power floats, hand tools) must be completed before 10pm on Monday to Friday, h) The licensee is required to undertake noise monitoring in accordance with condition L5.9(b), i) The licensee is required to provide the EPA with a Noise Monitoring Report within 30 days of the end of each month in which OOH concrete works occurred, j) Works are permitted to occur until 8 May 2024.	EPL variation proposed to include similar condition for works at Orchard Hills
M4.1	All noise and vibration monitoring for the purposes of determining compliance with the conditions of this licence must be undertaken by a suitably qualified and experienced person as defined in the special dictionary of this licence.	**Section 7**
M4.2	All noise monitoring for the purposes of determining compliance with the conditions of this licence must consider and be generally undertaken in accordance with; (a) Australian Standard AS 1055: 2018 Acoustics - Description and measurement of environmental noise; and (b) the compliance monitoring guidance provided in the chapter 7 'Monitoring Performance' of the Noise Policy for Industry (EPA, 2017).	**Section 7**
M4.3	All vibration monitoring must be: a) undertaken in accordance with the technical guidance provided in the Assessing Vibration: a technical guideline (DEC, 2006); and b) assessed and reported against the acceptable and maximum values of human exposure to vibration set out in Tables 2.2 and 2.4 of this guideline.	Not triggered. Vibration negligible.
M4.4	The licensee must undertake noise and vibration monitoring as directed by an authorised officer of the EPA. Where the monitoring is requested to take place on private land (for example a residential property) the licensee must request permission to access the premises in advance and keep a record of permission requests and responses. If a licensee is unable to obtain permission, the licensee must undertake the monitoring at an indicative location where possible and they must provide the response (including any nil response) to the EPA.	Noted.
M4.5	Additional Monitoring Conditions The licensee must undertake monitoring, sampling, video recording and/or take photographs: a) if the EPA or licensee reasonably suspects that an event has occurred at the premises or in connection with the carrying out of the activities that has caused, is causing, is likely to cause or has the potential to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies); b) as soon as practicable; and c) as directed by an authorised officer.	**Section 7**

ID	Condition	DNVIS Reference
E1.1	Work outside standard construction hours - community consultation and agreement The licensee may work outside standard construction hours (as defined in L5.1) in circumstances other than those permitted under conditions L5.3, L5.5, or any other condition of this licence if the Licensee: a) undertakes community consultation and agreement as described in E1.2; b) submits to the EPA a written request to work outside the standard construction hours attaching information set out in E1.3; and c) obtains approval by the EPA to work outside standard construction hours. The EPA may, in exercising its discretion to approve the works outside standard construction hours, review whether the licensee has obtained community agreement. Specifically, whether a substantial majority of the individual Noise Sensitive Receivers who together comprise the Community Affected Catchments and were contacted has consented to the planned works out of standard hours.	N/A to this DNVIS.
E1.2	Requirements for community consultation and agreement Any community consultation and agreement undertaken with respect to the proposed out of hours works (OOHW) must: a) be prepared and implemented in accordance with the Interim Construction Noise Guidelines (DEC 2009), the Noise Policy for Industry (EPA, 2017) and AS2436-2010: Guide to noise and vibration control on construction, demolition and maintenance sites; b) include consultation of all noise sensitive receivers within the Community Affected Catchments. This includes Noise Sensitive Receivers that have declined to participate in previous agreements unless a community member has explicitly requested not to be involved in any future consultation about future OOHW; c) ensure that the noise sensitive receivers understand the nature of the works and any predicted impacts, including that consideration is made of additional requirements relevant to the needs of culturally and linguistically diverse Noise Sensitive Receivers, and include details for interpreting services for languages other than English where required. d) include in the community consultations with Noise Sensitive Receivers the following information: i. the actual works proposed; ii. any expected impacts in clear, plain English based on noise modelling; iii. the expected duration of the works; iv. any expected benefits for receivers; v. any other known concurrent OOHW that will be occurring; and vi. any other OOHW that will be occurring on the nights preceding and following the proposed works or, if the proposed work precedes or follows a weekend period, any other OOHW that will be occurring on the weekend. e) request consent from the Noise Sensitive Receiver for their responses to be provided to the EPA; f) ensure that a record is kept when a licensee is unable to contact a noise sensitive receiver after three attempts, including leaving "sorry I missed you" cards explaining the reason for the visit and requesting a return phone call; and g) demonstrate, where the OOHW is predicted to go on longer than 28 calendar days, that the licensee has consulted the community in relation to re-engagement periods for the purpose of determining agreement from the community is maintained and continuing. Detailed records are to be maintained by the licensee of all community consultations, including attempts to contact Noise Sensitive Receivers, and must be maintained for the duration of the licence. Any Noise Sensitive Receiver who requests a copy of the record of conversations must be supplied with one.	N/A to this DNVIS.

ID	Condition	DNVIS Reference
E1.3	The licensee must report to the EPA the community consultation and agreement process that was undertaken with the Community Affected Catchments. This report to the EPA must be: a) prepared in writing; b) detail the steps taken to fulfil the requirements of condition E1.2; c) demonstrate that the Noise Sensitive Receivers understood the nature of the works and any predicted impacts, including that consideration was made of additional requirements relevant to the needs of culturally and linguistically diverse Noise Sensitive Receivers; d) provide the script used during the community consultation with Noise Sensitive Receivers; e) report community response and consent rates (including where no contact could be made) against the total community affected catchments, and must be broken down into response and consent rates based on sub-catchments that are delineated by affectation levels; f) include a noise validation monitoring plan as required by E1.4; and g) be submitted to the EPA at least 15 business days prior to any works that are the subject of the agreement being undertaken unless prior arrangements have been made with the EPA. A copy of the report must be: a) kept by the licensee for the duration of this licence including on the premises, and made available to an EPA authorised officer on request; and b) be made available on the licensee's project website or another website approved in writing by the EPA for the duration of the OOHWs permitted under condition E1.1. (Personal details of Noise Sensitive Receivers must be omitted).	N/A to this DNVIS.
E1.4	Noise Validation Monitoring A noise validation monitoring plan must be submitted to the EPA for approval as part of the community agreement documentation prior to any OOHW occurring.	N/A to this DNVIS.
E1.5	Validation monitoring must be undertaken for any OOHW that are the approved under condition E1.1 and must: a) be undertaken in accordance with the monitoring plan prepared under condition E1.4; b) be performed by a Competent Person; c) be performed on at least the first 2 occasions (day, evening, nights) where OOHW will be undertaken and are likely to impact Noise Sensitive Receivers; d) be performed on any other occasion (day, evening, night) where the nature of the works is likely to cause greater noise impacts than the first 2 occasions; e) be representative of the impacts in terms of monitoring locations, time and duration of measurements; and f) be recorded and provided to an EPA officer upon request.	N/A to this DNVIS.
E1.6	If validation monitoring undertaken under Condition E1.5 shows that noise levels are higher than those predicted by any noise modelling undertaken as part of the community agreement, work practices must be modified immediately so that measured noise levels do not exceed predicted levels. Where it has been determined that works cannot be modified to achieve the predicted noise levels: a) the licensee must report immediately to the EPA; and b) after considering the circumstances EPA may withdraw its permission under E1.1.	N/A to this DNVIS.

ID	Condition	DNVIS Reference
E1.7	Ongoing community engagement and agreement a) For any approval of OOHW under E1.1 predicted to take longer than 28 calendar days to remain valid, the licensee must be able to demonstrate agreement from the community is maintained and continuing. b) To demonstrate agreement from the community is maintained and continuing the licensee must: i. engage the community to determine if a substantial majority of Noise Sensitive Receivers continue to consent to the OOHW pursuant to the re-engagement period determined under condition E1.2(d); ii. provide the EPA with a report within 7 calendar days of the end of each re-engagement period summarising the community response including ongoing consent rates of the Noise Sensitive Receiver; and c) Where the licensee is unable to demonstrate a substantial majority of agreement from Community Affected Catchment is maintained and continuing: i. the licensee must report immediately to the EPA; and ii. after considering the circumstances EPA may withdraw its permission under E1.1	N/A to this DNVIS.
REMMs		
NAH6	The following heritage items would be monitored for potential vibration impacts during construction: • St Marys Railway Station Group • Queen Street Post-War Commercial Building • St Marys Munitions Workers Housing • McGarvie Smith Farm • McMaster Farm	NA to this DNVIS.

3 Existing Noise Environment and Receivers

3.1 Noise Catchment Areas

A total number of twelve Noise Catchment Areas (NCAs) were nominated along the alignment of SMWSA Project in the EIS. NCAs are most useful in determining the NMLs for residential receivers as these are based on the measured existing background noise levels in the area.

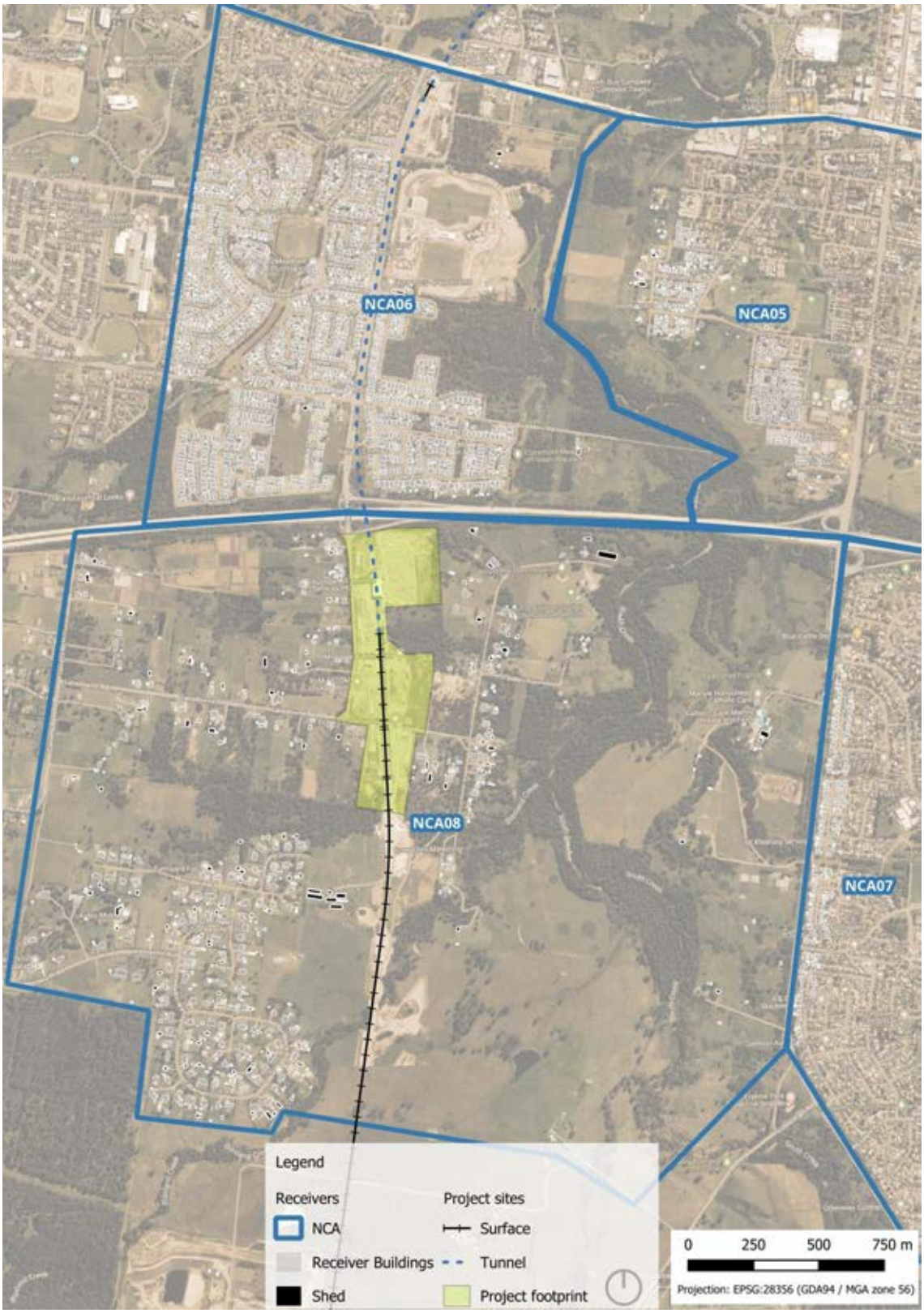
For these works, the noise sensitive receivers within four catchments, NCA05 to NCA08 are considered most relevant for this assessment and as such, the overview of these NCAs are described in **Table 3** and presented in **Figure 4**. This information is consistent with the NVMP.

Table 3 Relevant Noise Catchment Areas

NCA	Description of the Area
NCA05	Predominantly medium density single and multi-storey residential dwellings. Ambient noise conditions are dominated by traffic along Mamre Road.
NCA06	Predominantly medium density residential dwellings to the east of Gipps Street and south of Caddens Road. Ambient noise conditions are dominated by traffic along M4 Western Motorway and Gipps Street.
NCA07	Predominantly medium density single-storey residential dwellings, located to the east of the project. Ambient noise conditions are dominated by traffic along Mamre Road.
NCA08	Predominantly low-density single storey residential dwellings. East of the project is mostly open land with scattered receivers along Samuel Marsden Road and Lansdowne Road. Ambient noise conditions are dominated by traffic along the M4 Western Motorway.

Source: Noise and Vibration Management Sub-plan.

Figure 4 Relevant Noise Catchment Areas



Source: VMS.

3.2 Nearest Sensitive Receivers

Consistent with the EIS, approval and ICNG, receivers have been categorised based on their use as follows:

- Noise sensitive receivers including:
  - Residential.
  - Commercial.
  - Industrial.
  - Other noise sensitive receivers.
- Vibration sensitive receivers including:
  - Residential.
  - Commercial.
  - Industrial.
  - Heritage.
  - Critical working areas (such as operating theatres, labs).
  - Critical utilities.

Receivers potentially impacted by noise and vibration from construction activities have been identified following the completion of a detailed land use survey as per CoA E37. Sensitive receiver information within NCA05 to NCA08 for this assessment has been determined as per the land use survey conducted July 2023 and information from PLM.

On this basis and with reference to **Appendix B**, the nearest noise sensitive receivers to the works are residences in close proximity to the site including those along:

- Kent Road.
- Samuel Marsden Road.
- Lansdowne Road.

The closest other noise sensitive receiver, this being a childcare centre, is located at the intersection of Kent Road and Caddens Road where due to the closer proximity of residential receivers to the proposed works and the resulting higher impacts and more stringent mitigation requirements, mitigation to this receiver is considered to be adequately addressed through the required mitigation for residential receivers. Furthermore, the childcare centre only operates Monday to Friday, between 7:00am and 6:00pm, which is outside the hours that these works are proposed.

4 Construction Noise and Vibration Management Levels

There are no vibration intensive work activities identified as part of this DNVIS. Furthermore, the distance between an on-site work activity and residential receivers is at least 40m. On this basis, vibration impacts are expected to be negligible and as a result groundborne noise impacts are also expected to be negligible.

A potential increase in road traffic related noise, from construction related vehicles associated with these works using the public road network, will be negligible given the low number of expected vehicle movements. This is established on the findings of the worst-case scenarios as per the DNVIS for Orchard Hills Station - Standard Hours and Oversized Plant Delivery, REF: 21239.1.6, Revision 1, dated 29 November 2023.

Taking account of the above, this DNVIS will focus on impacts associated with airborne noise from construction works that are occurring on-site only.

4.1 Construction Noise Management Levels - Airborne Noise from On-site Works

The project specific Noise Management Levels (NMLs) for noise sensitive receivers as nominated in the NVMP are summarised in **Table 4**.

Table 4 Construction Noise Management Levels - Airborne Noise from On-site Works

Receiver Type	Noise Management Level[1] - dBA				
	$L_{eq(15\ minute)}$				L_{max}
Residential Receivers	Standard Hours[2]	OOH Evening[3]	OOH Evening[4]	OOH Night[5]	
NCA05	50	45	45	45	55[6] (65)[7]
NCA06	47	42	37	37	52[6] (65)[7]
NCA07	57	52	47	40	52[6] (65)[7]
NCA08	54	49	49	45	55[6] (65)[7]
Other Sensitive Receivers	Based on ICNG[8] $L_{eq(15minute)}$ - dBA				
Commercial	65				
Industrial	70				
Child Care Centre	55				
Education	55				

Note 1: Applied externally for residential receivers and when in use for other sensitive receivers.

Note 2: Monday to Friday 7:00am to 6:00pm and Saturday 8:00am to 1:00pm.

Note 3: Saturday 7:00am to 8:00am and 1:00pm to 6:00pm + Sunday 8:00am to 6:00pm.

Note 4: Monday to Sunday 6:00pm to 10:00pm.

Note 5: Sunday to Friday 10:00pm to 7:00am and Saturday 10:00pm to 8:00am.

Note 6: Sleep disturbance L_{max} screening level based on 52dBA or RBL + 15dB, whichever is the greater.

Note 7: Sleep awakening L_{max} level as per EIS.

Note 8: When in use.

5 Identification of Construction Activities

5.1 Site Related Construction Activities

Considering the work activities outlined in **Table 1**, worst-case scenarios likely to occur over a 15 minute period with associated equipment lists have been developed in consultation with PLM and summarised in **Table 6**.

It is critical to note that it is not necessary to model all plant and equipment for the purposes of noise or vibration impacts as the impact is typically dominated by one or only a few items working together. As an example, a trench being filled would primarily use an excavator and possibly a truck, later on a wacker packer could be used following on from this work. In this scenario, the impacts associated with the excavator and truck working together are worst-case compared to the works associated with the wacker packer. Furthermore, the contribution associated with hand tools and small power tools, used for short periods (over a 15 minute period) will be negligible.

The use of noise barriers has been confirmed regarding the operation of the concrete batching plant. This process included several discussions with PLM to ensure the location of these barriers did not interfere with the operations of the plant, nor the other related construction works. **Figure 2** shows the location and height of these modelled noise barriers.

Refer to **Table 5** regarding the maximum L_{Aeq} sound power levels (SWL) from construction plant proposed as part of this DNVIS.

It is important to note that PLM are obliged to use "realistic" plant SWLs that are modern and well maintained.

Table 5 L_{Aeq} Sound Power Levels of Construction Plant

Plant	Source	SWL (maximum L_{Aeq})
Concrete Agitator (concrete works)	VMS database	105
Concrete Pump (concrete works)	VMS database	105
Concrete Vibrator (concrete works)	VMS database	100
EWP (concrete works)	NVMP	97
Lighting Tower (concrete works)	NVMP	80
20t Franna Crane (concrete works)	TfNSW Strategy	98
Concrete Agitator loading (batching plant)	Bringelly NIA	107
Concrete Agitator slumping (batching plant)	Bringelly NIA	109
Conveyor (batching plant)	Bringelly NIA	73/m
20t FEL (batching plant)	VMS database	109
Generator (compound)	PLM[1,2,3]	97
Light vehicle/ute (compound)	NVMP	99

Note 1: On-site measurements conducted by PLM and reviewed by VMS, which included 2.1m high barriers and a canopy roof above.

Note 2: Since this measurement was undertaken, additional mitigation has been installed by PLM in the form of extending barriers to the roof canopy in the direction of the nearest residential receiver. Pending verification, VMS estimates a reduction of 8dB.

Note 3: The generator is located in the carpark off Landsdown Road. Mains power will not be connected to the temporary site shed and the generator will continue to be used during the construction period.

Table 6 Summary of Site Related Construction Work Scenarios

ID	Proposed Work Hours	Work Activity	Summary of Worst-Case Concurrently Operating Plant	Total SWL ($L_{Aeq(15min)}$ dBA)
S1	OOH Night	Concrete Batching Plant Operation	Concrete truck moving in/out FEL Concrete Loading Concrete Slumping Conveyors	105 (per truck)[1] 109[2] 107[3] 109[4] 73/m[5]
		Use of Site Office and Amenities	Generator Light vehicle/ute	97 99 (per vehicle)[6]
S2	OOH Evening (Weekdays 6pm to 10pm)	Concrete Batching Plant Operation	Concrete truck moving in/out FEL Concrete Loading Concrete Slumping Conveyors	105 (per truck)[1] 109[2] 107[3] 109[4] 73/m[5]
		Concrete Works	Concrete truck + agitator x 2 Concrete vibrator x 10 EWP x 2 Franna x 2 Lighting Tower x 2	114
		Use of Site Office and Amenities	Generator Light vehicle/ute	97 99 (per vehicle)[6]
S3	OOH Evening (Saturday 1pm to 4pm)	Concrete Batching Plant Operation	Concrete truck moving in/out FEL Concrete Loading Concrete Slumping Conveyors	105 (per truck)[7] 109[2] 107[8] 109[9] 73/m[5]
		Concrete Works	Concrete truck + agitator x 2 Concrete vibrator x 10 EWP x 2 Franna x 2	114
		Use of Site Office and Amenities	Generator Light vehicle/ute	97 99 (per vehicle)[6]

ID	Proposed Work Hours	Work Activity	Summary of Worst-Case Concurrently Operating Plant	Total SWL ($L_{Aeq(15min)}$ dBA)
S4	OOH Evening (Weekdays 6pm to 10pm)	Concrete Works	Concrete truck + agitator x 2 Concrete vibrator x 10 EWP x 2 Franna x 2 Lighting Tower x 2	114
		Use of Site Office and Amenities	Generator Light vehicle/ute	97 99 (per vehicle)[6]
S5	OOH Evening (Saturday 1pm to 4pm)	Concrete Works	Concrete truck + agitator x 2 Concrete vibrator x 10 EWP x 2 Franna x 2	114
		Use of Site Office and Amenities	Generator Light vehicle/ute	97 99 (per vehicle)[6]

Note 1: Adjusted in model to account for speed (10km/hr), distance and one movement in 15 minutes.

Note 2: Adjusted in model to account for 50% utilisation in 15 minutes.

Note 3: Adjusted in model to account for one loading cycle (3 minutes) in 15 minutes.

Note 4: Adjusted in model to account for one slumping cycle (5 minutes) in 15 minutes.

Note 5: 7 conveyors operating assumed as per Bringelly NIA.

Note 6: Adjusted in model to account for speed (10km/hr), distance and three movements in 15 minutes.

Note 7: Adjusted in model to account for speed (10km/hr), distance and two movements in 15 minutes.

Note 8: Adjusted in model to account for two loading cycles (3 minutes each) in 15 minutes.

Note 9: Adjusted in model to account for two slumping cycles (5 minutes each) in 15 minutes.

The above works are not considered to generate high noise impacts.

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6 Construction Noise Assessment

6.1 Airborne Noise from On-site Construction

Predictions have been undertaken using iNoise V2024 and include the following main inputs:

- Barriers as per **Figure 2**.
- Ground and air absorption.
- Natural shielding from topographical data obtained from SixMaps.
- Shielding from buildings (although continuous barriers are included in the model, shielding from the compound offices and localised, temporary barriers are conservatively not included).
- Typical construction octave band spectrum adjusted to consider the scenarios as per **Table 6**.

With consideration of the scenarios as per **Table 6** and the above variables, **Table 7**, **Table 8** and **Table 9** provide a summary of highest predicted $L_{Aeq(15minute)}$ noise levels for each noise sensitive receiver type within each identified NCA. It should be noted that some of the commercial and industrial receivers may not operate during all time periods.

Table 7 Summary of Predicted Noise - Evening OOH - Saturday 1pm to 6pm

Receiver Type	NML $L_{eq(15\ minute)}$ dBA	Predicted[1] Airborne Noise ($L_{eq(15\ minute)}$ dBA)	
		Scenario 3	Scenario 5 (no Batching Plant)
Noise Catchment Area 05			
Residential	45	37	37
Commercial	65	35	34
Industrial	70	38	37
Noise Catchment Area 06			
Residential	42	**51**	**50**
Commercial	65	34	33
Industrial	70	33	32
Noise Catchment Area 07			
Residential	52	37	36
Noise Catchment Area 08			
Residential	49	**64**	**63**
Commercial	65	46	45
Industrial	70	36	35

Note 1: Predicted exceedances are formatted **Bold**.

Table 8 Predicted Noise - Evening OOH - Weekdays 6pm to 10pm

Receiver Type	NML $L_{eq(15\ minute)}$ dBA	Predicted[1] Airborne Noise ($L_{eq(15minute)}$ dBA)	
		Scenario 2	Scenario 4 (no Batching Plant)
Noise Catchment Area 05			
Residential	45	37	37
Commercial	65	35	34
Industrial	70	38	37
Noise Catchment Area 06			
Residential	37	**51**	**50**
Commercial	65	34	33
Industrial	70	32	32
Noise Catchment Area 07			
Residential	47	37	36
Noise Catchment Area 08			
Residential	49	**64**	**63**
Commercial	65	46	45
Industrial	70	36	35

Note 1: Predicted exceedances are formatted **Bold**.

Table 9 Predicted Noise - Night OOH

Receiver Type	NML $L_{eq(15\ minute)}$ dBA	Predicted[1] Airborne Noise $L_{eq(15minute)}$ dBA
		Scenario 1
Noise Catchment Area 05		
Residential	45	30
Commercial	65	30
Industrial	70	30
Noise Catchment Area 06		
Residential	37	**44**
Commercial	65	<30
Industrial	70	<30
Noise Catchment Area 07		
Residential	40	30
Noise Catchment Area 08		
Residential	45	**56**
Commercial	65	38
Industrial	70	30

Note 1: Predicted exceedances are formatted **Bold**.

The following can be concluded from **Table 7**, **Table 8** and **Table 9**:

- No exceedances above NML have been predicted for commercial or industrial receivers within any NCA.
- No exceedances above NML have been predicted for residential receivers within NCA05 and NCA07.
- Exceedances to the residential receivers within NCA06 and NCA08 are associated with contributions from both concreting works and the operation of the batching plant.

On the basis of the above, all reasonable and feasible mitigation measures that could reduce noise impacts are to be considered for these receivers, after which, if necessary, AMMs shall be applied to further manage impacts.

6.2 Sleep Disturbance

The risk of potential sleep disturbance as a result of OOH works is assessed in accordance with the CNVS. In consideration of the noise impact predictions presented in **Table 9** it is evident that night OOH works will result in exceedances of the specified 40dBA or RBL + 5dB sleep disturbance screening criteria. On this basis a further investigation is warranted considering the L_{max} parameter, in particular for the nearest residences which are located within NCA08.

It is important to note that the L_{eq} parameter is typically assessed over a time period and is an energy average of all noise over that time period. In terms of construction noise, this will be the noise from all plant and with reference to the EPA, the time period is 15 minutes. Furthermore, when assessed at a receiver, a correction could be applied to the L_{eq} parameter to take into account the character of the noise. Both EPA and Metro allow for a 5dB penalty to be applied given the character of noise from the use of particular plant (such as the use of a hydraulic hammer/rock breaker).

The L_{max} parameter is the maximum noise level measured over a given period of time and considering construction noise and with reference to the EPA, a measurement over 15 minutes is considered standard. Unlike the L_{eq} parameter, the L_{max} parameter is not energy averaged over a period of time, nor is a correction applied for character. Maximum noise events are individual events and are NOT to be logarithmically added. At the end of a measurement period, the L_{max} noise level is ALWAYS larger than the L_{eq} noise level. The deviation between these two parameters can provide information about the type of noise that was measured. With reference to construction activities, the use of a generator or saw will typically result in the L_{max} noise level and the L_{eq} noise level to be no greater than 3dB, however if the activity is relatively quiet but has several bangs and crashes, then the difference is likely to be in the order of 10dB. For most construction activities, where there are several plant items, the average difference over a 15 minute period is typically 3dB to 8dB. Care must be taken when selecting L_{max} sound power levels as when there are a number of large plant items concentrated in an area, the cumulative L_{eq} noise level may well be a better representation of sleep disturbance as individual maximum events are not as impactful.

For this DNVIS, the scenario includes the operation of a batching plant and use of site and amenities. Neither of these scenarios involves the generation of high level maximum noise events.

L_{max} SWLs for the two noisiest construction plant (that would operate during the night) are provided in **Table 10** and maximum noise level predictions are presented in **Table 11**.

Table 10 L_{max} Sound Power Levels of Construction Plant

Plant	SWL (L_{max}) dBA
Light vehicle/ute manoeuvring to park	104
Concrete agitator manoeuvring around batching plant	111

Table 11 Summary of Predicted Airborne Noise from Construction - L_{max}

Receiver Type	NML L_{max} dBA	Predicted[1] Airborne Noise for each Scenario L_{max} dBA	
		S1 (Batching Plant)	S1 (Site Office and Amenities)
Noise Catchment Area 08			
Residential	55	***63***	***59***

Note 1: Predicted exceedances are formatted **Bold**.

As presented in **Table 11**, there is a risk that the sleep disturbance criteria will be exceeded for residences within NCA08 and in particular for those with a direct line of site of night works. However, predictions above L_{max} 65dBA are unlikely and so there is a low risk of sleep awakenings from these works. Furthermore, it is considered that the Additional Mitigation Measures (AMMs) triggered for the night works will sufficiently address the risk of sleep disturbance.

7 Mitigation Measures

In the first instance, all feasible and reasonable mitigation measures to reduce the impact will be assessed. These are considered Standard Mitigation Measures (SMMs) and for this project, the mitigation (that will actually reduce noise levels) will involve controls at the source and/or the path (between the source and receiver).

Following this and in the event of residual exceedances, mitigation measures to manage the impacts will be implemented following the process within the CNVS using AMMs.

7.1 Standard Mitigation Measures

The following SMMs have been assessed by PLM following consideration of whether reasonable and feasible:

1. Selection of quieter plant and processes to reduce noise. In this regard, an FEL with a SWL of no greater than 109dBA is to be sourced for use within the Batching Plant. Furthermore, the FEL is only to be used for no more than 7.5 minutes in any 15 minute period (50% utilisation) during OOH.
2. All noise barriers associated with the batching plant are to be implemented as per **Figure 2**.
3. The conduction of multiple construction activities in close proximity is to be avoided to reduce cumulative noise impacts.
4. All noisy stationary plant to be located as far from noise sensitive receivers as possible and incorporate noise blankets/localised barriers.
5. Non-tonal reversing alarms or equivalent are to be used on all plant that will regularly be used on site.
6. Site induction including at minimum, all relevant project specific noise mitigation measures and high-risk activities.
7. Any plant that may include directional noise sources (ie NDD suction) should orient the plant so that this noise source is directed away from sensitive receivers.
8. PLM will take all reasonable steps to communicate with the proponents of other nearby works sites to minimise cumulative acoustic impacts where there is a risk that other construction projects are impacting the same receivers.
9. Consultation with affected receivers as per CCS will be ongoing.
10. Use of two way radios for communication, no shouting or use of horns.
11. Notification and complaint management as per L5.4 and in line with CCS.
12. As required by the EPL, the implementation of any respite periods must consider any neighbouring concurrent construction works with may impact the same noise sensitive receivers such that respite periods, if required, are being achieved as much as is reasonably practicable.
13. Noise monitoring for periods predicted to have the highest noise level impacts as required by the EPL.
14. As required by L5.9, ensure that works and activities do not result in noise levels exceeding those specified in condition L5.3 at the same noise sensitive receivers on more than:
    - 2 consecutive evenings and/or nights at any time; and
    - 3 evenings and/or nights per week; and
    - 10 evenings and/or nights per month.

7.2 Additional Mitigation Measures

In line with the CNVS, AMMs for airborne noise will be provided based on the exceedance above the NML. The description of each AMM is reproduced in **Table 12** and the level of impact which triggers consideration of each AMMs reproduced in **Table 13**. Refer to **Table 14** regarding applicable Airborne Noise AMMs.

During the planning of the works, the Community Liaison Team will liaise with the Project Team for the implementation of the selected measures following whether each measure is feasible and reasonable. The objective of these measures is to engage, inform and provide Project-specific messages to the community, recognising that advanced warning of potential disruptions can assist in reducing the impact.

Table 12 Additional Mitigation Measures

Measure	Description
Alternative Accommodation (AA)[1]	Alternative accommodation options may be provided for residents living in close proximity to construction works that are likely to incur unreasonably high impacts over an extended period of time. Alternative accommodation will be determined on a case-by-case basis.
Monitoring (M)	Where it has been identified that specific construction activities are likely to exceed the relevant noise or vibration goals, noise or vibration monitoring may be conducted at the affected receiver(s) or a nominated representative location (typically the nearest receiver where more than one receiver have been identified). Monitoring can be in the form of either unattended logging or operator attended surveys. The purpose of monitoring is to inform the relevant personnel when the noise or vibration goal has been exceeded so that additional management measures may be implemented.
Individual briefings (IB)	Individual briefings are used to inform stakeholders about the impacts of high noise activities and mitigation measures that will be implemented. Communications representatives from the contractor would visit identified stakeholders at least 48 hours ahead of potentially disturbing construction activities. Individual briefings provide affected stakeholders with personalised contact and tailored advice, with the opportunity to comment on the project.
Letter box drops (LB)	For each Sydney Metro project, a newsletter is produced and distributed to the local community via letterbox drop and the project mailing list. These newsletters provide an overview of current and upcoming works across the project and other topics of interest. The objective is to engage and inform and provide project-specific messages. Advanced warning of potential disruptions (e.g. traffic changes or noisy works) can assist in reducing the impact on the community. Content and newsletter length is determined on a project-by-project basis. Most projects distribute notifications on a monthly basis. Each newsletter is graphically designed within a branded template.
Project specific respite offer (RO) [1]	The purpose of a project specific respite offer is to provide residents subjected to lengthy periods of noise or vibration respite from an ongoing impact.
Phone calls and emails (PC)	Phone calls and/or emails detailing relevant information would be made to identified/affected stakeholders within 7 days of proposed work. Phone calls and/or emails provide affected stakeholders with personalised contact and tailored advice, with the opportunity to provide comments on the proposed work and specific needs etc.
Specific notifications (SN)	Specific notifications would be letterbox dropped or hand distributed to identified stakeholders no later than 7 days ahead of construction activities that are likely to exceed the noise objectives. This form of communication is used to support periodic notifications, or to advertise unscheduled works.

Note 1: Measures typically reserved for residential properties.

Table 13 AMM Matrix - Airborne Construction Noise

Time Period		Mitigation Measures			
		Predicted $L_{eq(15\ minute)}$ Noise Level Above NML			
		0 to 10dB	10 to 20dB	20 to 30dB	>30dB
OOH (Evening)	Mon-Fri (6.00pm - 10.00pm)	LB	LB, M	LB, M, SN, RO	LB, M, SN, IB, PC, RO
	Sat (1.00pm - 10.00pm)				
	Sun/Pub Hol (8.00am - 6.00pm)				
OOH (Night)	Mon-Fri (10.00pm - 7.00am)	LB	LB, M, SN, RO	LB, M, SN, IB, PC, RO, AA	LB, M, SN, IB, PC, RO, AA
	Sat (10.00pm - 8.00am)				
	Sun/Pub Hol (6.00pm - 7.00am)				

Table 14 Number of Receivers Where NMLs are Exceeded - OOH

Scenario	Number of Receivers Where Construction NMLs Are Exceeded and AMM Category							
	0 to 10dB		10 to 20dB		20 to 30dB		> 30dB	
	NCA06	NCA08	NCA06	NCA08	NCA06	NCA08	NCA06	NCA08
OOH Night								
S1	38	19	-	1	-	-	-	-
OOH Evening (Weekdays 6:00pm to 10:00pm)								
S2	332	41	20	3	-	-	-	-
S4	58	37	-	3	-	-	-	-
OOH Evening (Saturdays 1:00pm to 6:00pm)								
S3	78	41	-	3	-	-	-	-
S5	278	37	18	3	-	-	-	-

To inform the Communications Team, both exceedance maps and associated predicted levels to those receivers where NMLs are exceeded and require AMMs are provided as **Appendix C** and **Appendix D** to this report.

7.2.1 Monitoring of Noise

Noise monitoring shall be undertaken by suitably qualified persons in accordance with Sydney Metro (and EPA) requirements in order to confirm that the noise levels in the community are consistent with the predictions in this DNVIS and that appropriate mitigation is in place or otherwise required.

Operator attended measurements are preferred and are to be undertaken at the nearest and/or highest impacted sensitive receivers at the time of the survey. Notes and photos to confirm events associated with the works or otherwise should be taken where permitted. The final monitoring location will depend on the works being undertaken and their location to nearby receivers (particularly residential) at the time of the survey, however, the following is provided as indicative only:

- Monitoring within NCA06 could potentially occur at residences along Doncaster Avenue (to the south), during scenarios S2 and S5.
- Monitoring within NCA08 could potentially occur at residences on the corner of Kent Road and Lansdowne Road, during all scenarios.

Alternatively, unattended monitoring may be undertaken which shall include real-time monitoring data (with real-time alerts if required). Monitors are to be installed at locations representative of highest potential impacts. Such locations are likely to fall within private land, e.g. opposite Kent Road, Samuel Marsden Road and Lansdowne Road, and therefore the final location(s) will be determined based on suitability and permission to access private land.

With reference to **Table 13** and **Table 14**, noise monitoring is triggered for all proposed OOH works.

7.2.2 Operator Attended Plant and Equipment Noise Audits

Internal compliance auditing of plant and equipment noise emissions would be undertaken via operator attended measurements of a representative selection of plant and equipment used on-site to confirm that the operating noise levels comply with the sound power levels in **Table 5**.

Off-site plant noise auditing may be requested at any time by Sydney Metro, if inspections indicate that plant used on-site is louder than expected.

In line with recent Sydney Metro projects, it is sensible to firstly target plant and equipment that appear to be excessively noisy than expected and those assumed to have a noise level of 105dBA or greater, when measured over a 15 minute period, using the L_{eq} descriptor.

During the measurement, the range of L_{max} levels should also be measured and comparison made against the sound power levels in **Table 11**.

8 Conclusion

A detailed construction noise and vibration impact assessment for the proposed OOH Batching Plant and Concreting Works at Orchard Hills Station, associated with the Sydney Metro Western Sydney Airport (Stations, Systems, Trains, Operations and Maintenance package) has been completed by VMS Australia Pty Ltd.

Considering worst case construction scenarios, the assessment concludes the following with respect to construction airborne noise from site works:

- No exceedances above noise management levels have been predicted for commercial or industrial receivers within any noise catchment area.
- No exceedances above noise management levels have been predicted for residential receivers within noise catchment area 05 and 07.
- Exceedances above noise management levels have been predicted for residential receivers within noise catchment area 06 and 08 even after the implementing standard mitigation measures.
- Additional mitigation measures are therefore triggered for some residential receivers within noise catchment area 06 and 08 corresponding to the 10 to 20dB category as a worst case. Mitigation will include letterbox drops and monitoring (noise only), during the evening time period as per Metro Standard, whilst during the night period, specific notification, individual briefing and respite offers are triggered for a single receiver (2565) within noise catchment area 08. It must be noted that a noise contributor to this receiver is the operation of the generator and that recent additional mitigation in the form of extending noise barriers to the roof canopy.
- The risk of sleep disturbance has been assessed and considered a low risk with the impact below that of sleep awakenings (L_{max} 65dBA) and as such the implementation of the additional mitigation measures and Environment Protection License requirements, will sufficiently address the risk of sleep disturbance.

It can therefore be concluded that with the implementation of the mitigation measures as outlined in this assessment that the impacts related to these construction works can be managed to comply with the requirement of the Approval and License.

Abbreviations and Terminology

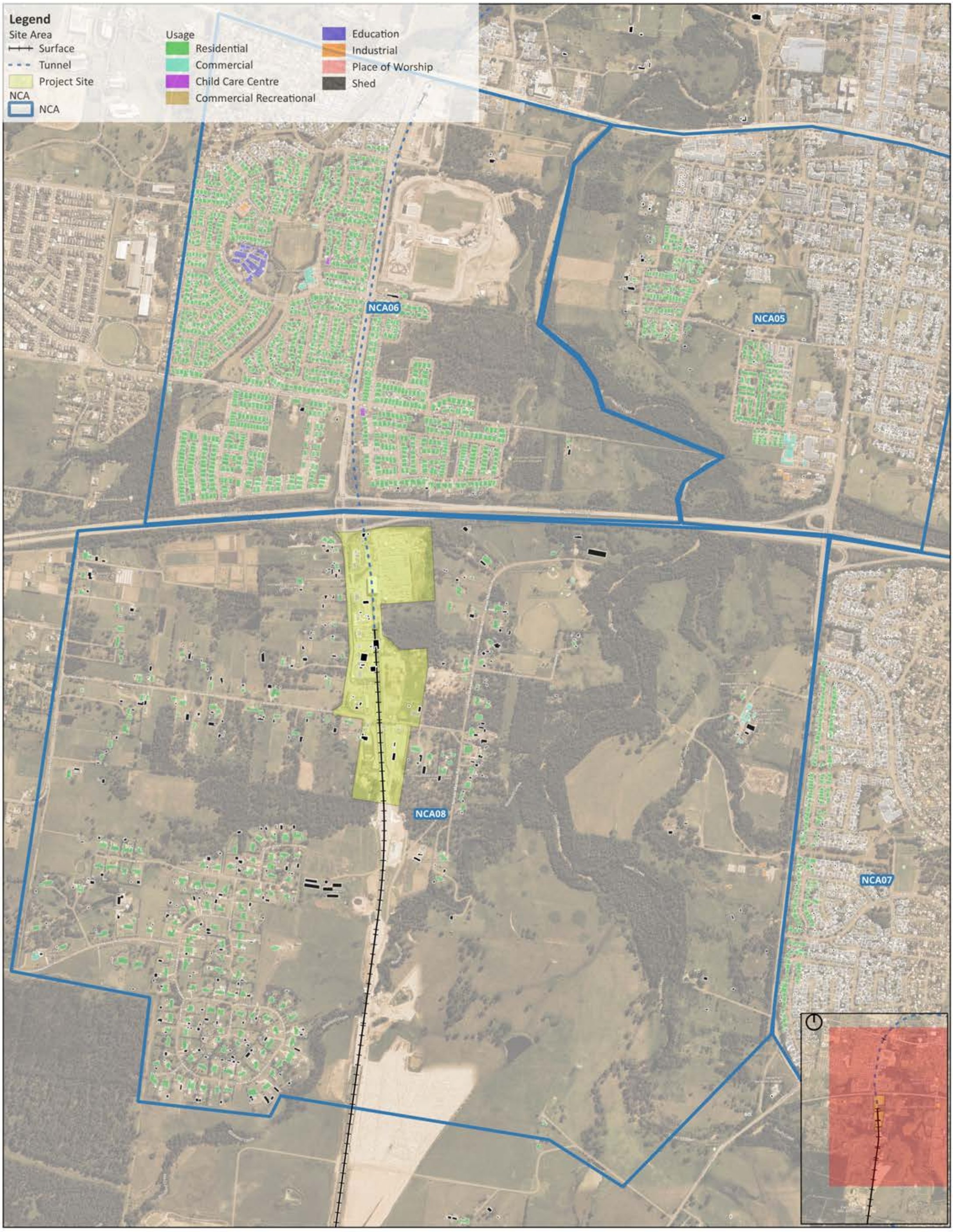
Term/Acronym	Definition
Ambient Noise	The all-encompassing noise associated within a given environment at a given time, usually composed of sound from all sources near and far.
AMM	Additional Mitigation Measures.
AS	Australian Standard.
A-weighting	A frequency dependent filter applied to an instrument-measured noise. In its simplest form, the filter is designed to replicate the relative sensitivity to loudness perceived by the human ear.
Background Noise	Background noise is the term used to describe the underlying level of noise present in the ambient noise, measured in the absence of the noise under investigation. It is described as the average of the minimum noise levels measured on a sound level meter and is measured statistically as the A-weighted noise level exceeded for ninety percent of a sample period. This is represented as the L_{A90} noise level.
Barrier	Solid walls or partitions, solid fences, earth mounds, earth berms, buildings, etc. used to reduce noise.
CEMP	Construction Environmental Management Plan.
CNVS	Sydney Metro Construction Noise and Vibration Standard.
CoA	Conditions of Approval.
Condition	Planning Minister's Condition of Approval.
Construction	Includes all physical work required to construct the Project, as defined in the CoA including commissioning trials of equipment and temporary use of any part of the Project.
CR	Complaints Register.
dB(A)	A-weighted decibels is an expression of the relative loudness of sounds in the air as perceived by the human ear.
DNVIS	Detailed Noise and Vibration Impact Statement.
EIS	Environmental Impact Statement.
EM	Environment Manager.
EMS	Environmental Management System.
Environment	Includes all aspects of the surroundings of humans, whether affecting any human as an individual or in his or her social groupings.
EPA	NSW Environment Protection Authority.
EPL	Environment Protection License.
ER	The independent Environmental Representative appointed under the Project Planning Approval.
Feasible and Reasonable	Consideration of best practice taking into account the benefit of proposed measures and their technological and associated operational application in the NSW and Australian context. Engineering considerations and what is practical to build. Reasonable Feasible relates to relates to the application of judgement in arriving at a decision, taking into account mitigation benefits and cost of mitigation versus benefits provided, community views and nature and extent of potential improvements.
Frequency	Frequency is synonymous to pitch. Frequency or pitch can be measured on a scale in units of Hertz (Hz). Most noise sources typically comprise of a vast, and often complex, range of frequencies.
HNA	Highly Noise Affected.
Heavy Vehicle	Has the same meaning as in the Heavy Vehicle National Law.
ICNG	Interim Construction Noise Guideline (EPA, 2009).
L_{Aeq}	The equivalent continuous sound pressure level in dB(A). It is often accompanied by an additional suffix "T", which is indicative of the measurement time period. (e.g. $L_{Aeq,15min}$, symbolising the measurement is evaluated over 15-minutes).
Land	Has the same meaning as the definition of the term in section 1.4 of the EP&A Act.
NCA	Noise Catchment Area.
Negligible	Small and unimportant, such as to be not worth considering.
NML	Noise Management Level
NPfI	Noise Policy for Industry (EPA, 2017).
Operator	The principal construction contractor responsible for delivering the Project.

Term/Acronym	Definition
Parklife Metro	Consortium comprising entities of Plenary, Siemens, RATP Dev and Webuild as the Applicant for the Sydney Metro Western Sydney Airport SSTOM Package.
Parklife Metro D&C	Parklife Metro Design and Construct. Consists of Webuild S.P.A, Siemens Mobility Pty Ltd and Richard Crookes Constructions Pty Ltd. Responsible for the construction of SSTOM Works.
Peak Particle Velocity	The peak particle velocity (PPV) is the most accepted and used indicator of vibration levels. Most regulations and standards prescribe vibrations thresholds in terms of the PPV. For each recorded waveform, the maximum particle velocity over the total recorded time is regarded as the peak particle velocity. This type of particle velocity must not be confused with the velocity with which the wave propagates through the medium. PPV is typically measured in the units of mm/s.
RBL	The Rating Background Level for each period is the medium value of the Assessment Background Level values for the period over all of the days measured. There is therefore an RBL value for each period (day, evening and night).
REMM	Revised Environmental Management Measures as per the Submissions Report.
Residence	Existing or approved dwelling.
Reverberation	The persistence of a sound within a space, which will naturally decay over time. Most apparent once the source signal has ceased emitting. Reverberation may have effects on speech intelligibility if not adequately controlled. Reverberation time, represented in seconds, can vary depending on the volume and surface finishes of the space.
RMS	NSW Roads and Maritime Services.
RNP	NSW Road Noise Policy (EPA 2011).
Rw	Weighted sound reduction index. A single number value which represents the airborne sound insulation performance of a partition or building element that has been determined under laboratory testing conditions.
Sensitive Periods	Period of time determined in consultation with affected sensitive receiver.
Sensitive Receiver	Includes residences, educational institutions (including preschools, schools, universities, TAFE colleges), health care facilities (including nursing homes, hospitals), religious facilities (including churches), child care centres, passive recreation areas (including outdoor grounds used for teaching), active recreation areas (including parks and sports grounds). Receivers that may be considered to be sensitive include commercial premises (including film and television studios, research facilities, entertainment spaces, temporary accommodation such as caravan parks and camping grounds, restaurants, office premises, and retail spaces) and industrial premises, and others as identified by the Secretary.
Sound Power Level	The Sound Power Level is the sound power relative to a standard reference pressure of 1pW (10^{-12} Watts) on a decibel scale. Unlike sound pressure, sound power is neither room-dependent nor distance-dependent. The SWL of a simple point source may be used to calculate the SPL at a given distance (r) using the following formula: $SPL = SWL - 10 \times Log_{10}(4 \times \pi \times r^2)$ Note that the above formula is only valid for sound propagation in the free-field.
Spectrum	The spectrum is the result of transforming a time domain signal to the frequency domain. Spectrum analysis is the procedure of doing the transformation, and it is most commonly done with an FFT analyser.
SSTOM	Stations, Systems, Trains, Operations and Maintenance.
TfNSW	Transport for New South Wales.
the Project	Sydney Metro Western Sydney Airport.
VDV	Vibration Dose Value
VMS	VMS Australia Pty Ltd.
Works	All physical activities to construct the Project.

Appendix B

Land Use Survey

21239.1.10



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Projection:	GDA94 / MGA zone 56

0 300 600

SSTOM: Orchard Hills Batch Plant and Concreting OOH

Land Usage

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www.vms.com.au

Appendix C

Additional Mitigation Measures Maps

21239.1.10

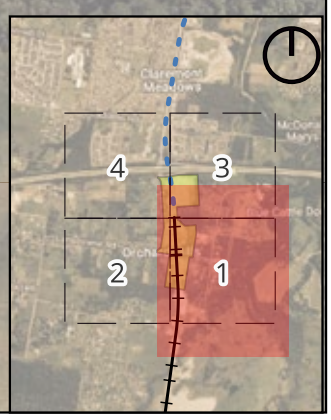
Legend

Other Elements
- Building - Shed
- NCA
- Modelled Source Location

Alignment
- Tunnel
- Surface
- Project site
- Noise Barrier

AMM Categories
- Not Triggered
- 0 - 10 dB
- 10 - 20 dB
- 20 - 30 dB
- >30 dB
- Highly Noise Affected

NCA08



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Sheet Size:	@A4
Projection:	GDA94 / MGA zone 56

0 100 200 m

SSTOM: Orchard Hills Batch Plant and Concreting OOH

Construction Airborne Noise Assessment
Additional Mitigation Measures

Assessment Scenario: S1 (OOH Night)

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Legend

Other Elements
- Building - Shed
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- Modelled Source Location

Alignment
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- Project site
- Noise Barrier

AMM Categories
- Not Triggered
- 0 - 10 dB
- 10 - 20 dB
- 20 - 30 dB
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NCA08

2558 2569 2567 2565 2547

Lansdowne Rd Wentworth Rd Muscatel Way Verdelho Way Tasman Grove

4 3 2 1

Project No.:	21239.1
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Scale:	1:4,500
Sheet Size:	@A4
Projection:	GDA94 / MGA zone 56

0 100 200 m

SSTOM: Orchard Hills Batch Plant and Concreting OOH

Construction Airborne Noise Assessment
Additional Mitigation Measures

Assessment Scenario: S1 (OOH Night)

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Legend

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NCA05
NCA06
NCA08

Project No.:	21239.1
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0 100 200 m

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Construction Airborne Noise Assessment
Additional Mitigation Measures

Assessment Scenario: S1 (OOH Night)

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Legend

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Alignment
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- Project site
- Noise Barrier

AMM Categories
- Not Triggered
- 0 - 10 dB
- 10 - 20 dB
- 20 - 30 dB
- >30 dB
- Highly Noise Affected

NCA06

NCA08

2977 12072 2919 2920 2921 12088 12071 2480 12070 2069 2068 12038 12039 2558

4 3 2 1

Project No.:	21239.1
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0 100 200 m

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Construction Airborne Noise Assessment
Additional Mitigation Measures

Assessment Scenario: S1 (OOH Night)

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NCA08

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0 100 200 m

SSTOM: Orchard Hills Batch Plant and Concreting OOH

Construction Airborne Noise Assessment
Additional Mitigation Measures

Assessment Scenario: S2 (OOH Evening)

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Legend

Other Elements
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Alignment
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- Noise Barrier

AMM Categories
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- 0 - 10 dB
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NCA08

Project No.:	21239.1
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0 100 200 m

SSTOM: Orchard Hills Batch Plant and Concreting OOH

Construction Airborne Noise Assessment
Additional Mitigation Measures

Assessment Scenario: S2 (OOH Evening)

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Legend

Other Elements
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Alignment
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- Surface
- Project site
- Noise Barrier

AMM Categories
- Not Triggered
- 0 - 10 dB
- 10 - 20 dB
- 20 - 30 dB
- >30 dB
- Highly Noise Affected

NCA05
NCA06
NCA08
Western Motorway
Samuel Marsden Rd
Caddens Rd
Kent Rd
Kerrill Rd
Central Park Dr
Doncaster Ave
Flinders Ave
South Creek

Project No.:	21239.1
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0 100 200 m

SSTOM: Orchard Hills Batch Plant and Concreting OOH

Construction Airborne Noise Assessment
Additional Mitigation Measures

Assessment Scenario: S2 (OOH Evening)

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Legend

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NCA06

NCA08

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0 100 200 m

SSTOM: Orchard Hills Batch Plant and Concreting OOH

Construction Airborne Noise Assessment
Additional Mitigation Measures

Assessment Scenario: S2 (OOH Evening)

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Legend

Other Elements
- Building - Shed
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Alignment
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- Surface
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- Noise Barrier

AMM Categories
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NCA08

Project No.:	21239.1
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Drawn by:	MS
Scale:	1:4,500
Sheet Size:	@A4
Projection:	GDA94 / MGA zone 56

0 100 200 m

SSTOM: Orchard Hills Batch Plant and Concreting OOH

Construction Airborne Noise Assessment
Additional Mitigation Measures

Assessment Scenario: S3 (Saturday OOH 1pm - 6pm)

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Legend

Other Elements

- Building - Shed
- NCA
- Modelled Source Location

Alignment

- Tunnel
- Surface
- Project site
- Noise Barrier

AMM Categories

- Not Triggered
- 0 - 10 dB
- 10 - 20 dB
- 20 - 30 dB
- >30 dB
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NCA08

Project No.:	21239.1
Date:	05/06/2024
Drawn by:	MS
Scale:	1:4,500
Sheet Size:	@A4
Projection:	GDA94 / MGA zone 56

0 100 200 m

SSTOM: Orchard Hills Batch Plant and Concreting OOH

Construction Airborne Noise Assessment
Additional Mitigation Measures

Assessment Scenario: S3 (Saturday OOH 1pm - 6pm)

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Legend

Other Elements
- Building - Shed
- NCA
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Alignment
- Tunnel
- Surface
- Project site
- Noise Barrier

AMM Categories
- Not Triggered
- 0 - 10 dB
- 10 - 20 dB
- 20 - 30 dB
- >30 dB
- Highly Noise Affected

NCA05
NCA06
NCA08

Project No.:	21239.1
Date:	05/06/2024
Drawn by:	MS
Scale:	1:4,500
Sheet Size:	@A4
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0 100 200 m

SSTOM: Orchard Hills Batch Plant and Concreting OOH

Construction Airborne Noise Assessment
Additional Mitigation Measures

Assessment Scenario: S3 (Saturday OOH 1pm - 6pm)

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Legend

Other Elements
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- Surface
- Project site
- Noise Barrier

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NCA06

NCA08

Project No.:	21239.1
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0 100 200 m

SSTOM: Orchard Hills Batch Plant and Concreting OOH

Construction Airborne Noise Assessment
Additional Mitigation Measures

Assessment Scenario: S3 (Saturday OOH 1pm - 6pm)

VMS AUSTRALIA
T: 1800 867 000
E: info@vms.com.au
www.vms.com.au

Legend

Other Elements

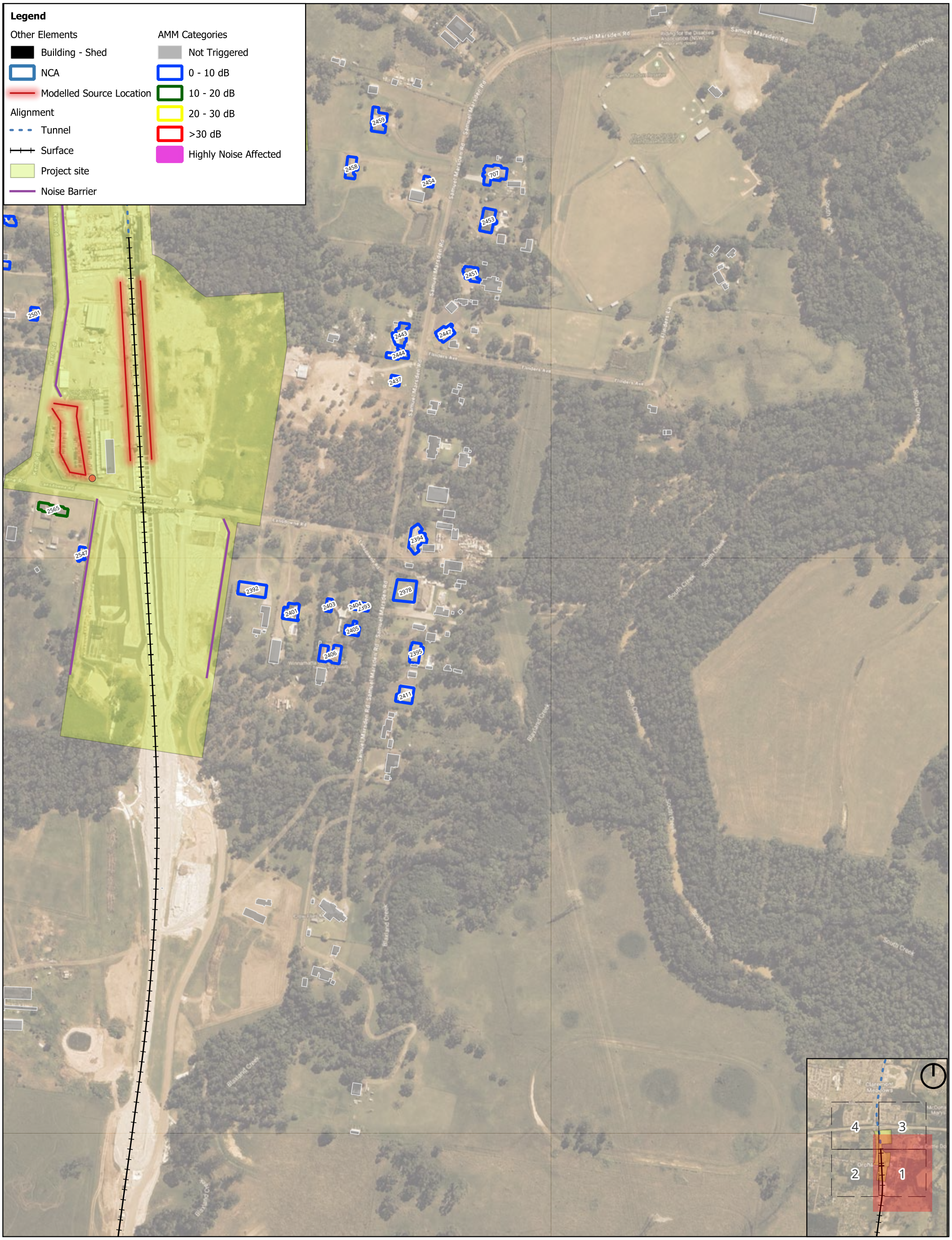
- Building - Shed
- NCA
- Modelled Source Location

Alignment

- Tunnel
- Surface
- Project site
- Noise Barrier

AMM Categories

- Not Triggered
- 0 - 10 dB
- 10 - 20 dB
- 20 - 30 dB
- >30 dB
- Highly Noise Affected



Project No.:	21239.1
Date:	05/06/2024
Drawn by:	MS
Scale:	1:4,500
Sheet Size:	@A4
Projection:	GDA94 / MGA zone 56

0 100 200 m

SSTOM: Orchard Hills Batch Plant and Concreting OOH

Construction Airborne Noise Assessment
Additional Mitigation Measures

Assessment Scenario: S4 (Saturday OOH 1pm - 6pm)

VMS AUSTRALIA
T: 1800 867 000
E: info@vms.com.au
www.vms.com.au

Legend

Other Elements
- Building - Shed
- NCA
- Modelled Source Location

Alignment
- Tunnel
- Surface
- Project site
- Noise Barrier

AMM Categories
- Not Triggered
- 0 - 10 dB
- 10 - 20 dB
- 20 - 30 dB
- >30 dB
- Highly Noise Affected

Project No.:	21239.1
Date:	05/06/2024
Drawn by:	MS
Scale:	1:4,500
Sheet Size:	@A4
Projection:	GDA94 / MGA zone 56

0 100 200 m

SSTOM: Orchard Hills Batch Plant and Concreting OOH

Construction Airborne Noise Assessment
Additional Mitigation Measures

Assessment Scenario: S4 (Saturday OOH 1pm - 6pm)

VMS AUSTRALIA
T: 1800 867 000
E: info@vms.com.au
www.vms.com.au

Legend

Other Elements

- Building - Shed
- NCA
- Modelled Source Location

Alignment

- Tunnel
- Surface
- Project site
- Noise Barrier

AMM Categories

- Not Triggered
- 0 - 10 dB
- 10 - 20 dB
- 20 - 30 dB
- >30 dB
- Highly Noise Affected

Project No.:	21239.1
Date:	05/06/2024
Drawn by:	MS
Scale:	1:4,500
Sheet Size:	@A4
Projection:	GDA94 / MGA zone 56

0 100 200 m

SSTOM: Orchard Hills Batch Plant and Concreting OOH

Construction Airborne Noise Assessment
Additional Mitigation Measures

Assessment Scenario: S4 (Saturday OOH 1pm - 6pm)

VMS AUSTRALIA
T: 1800 867 000
E: info@vms.com.au
www.vms.com.au

Legend

Other Elements

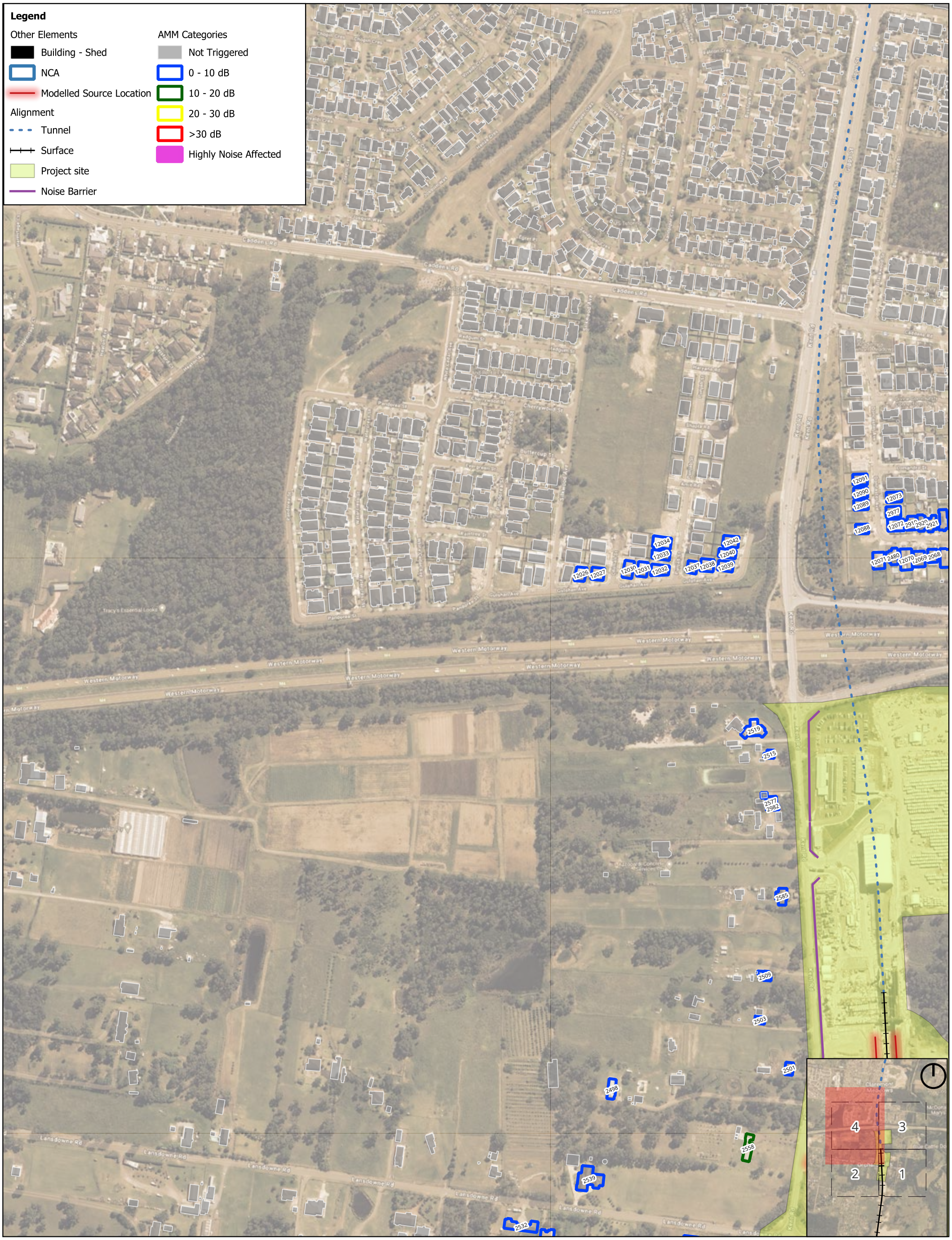
- Building - Shed
- NCA
- Modelled Source Location

Alignment

- Tunnel
- Surface
- Project site
- Noise Barrier

AMM Categories

- Not Triggered
- 0 - 10 dB
- 10 - 20 dB
- 20 - 30 dB
- >30 dB
- Highly Noise Affected



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Date:	05/06/2024
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Scale:	1:4,500
Sheet Size:	@A4
Projection:	GDA94 / MGA zone 56

0 100 200 m

SSTOM: Orchard Hills Batch Plant and Concreting OOH

Construction Airborne Noise Assessment
Additional Mitigation Measures

Assessment Scenario: S4 (Saturday OOH 1pm - 6pm)

VMS AUSTRALIA
T: 1800 867 000
E: info@vms.com.au
www.vms.com.au

Legend

Other Elements

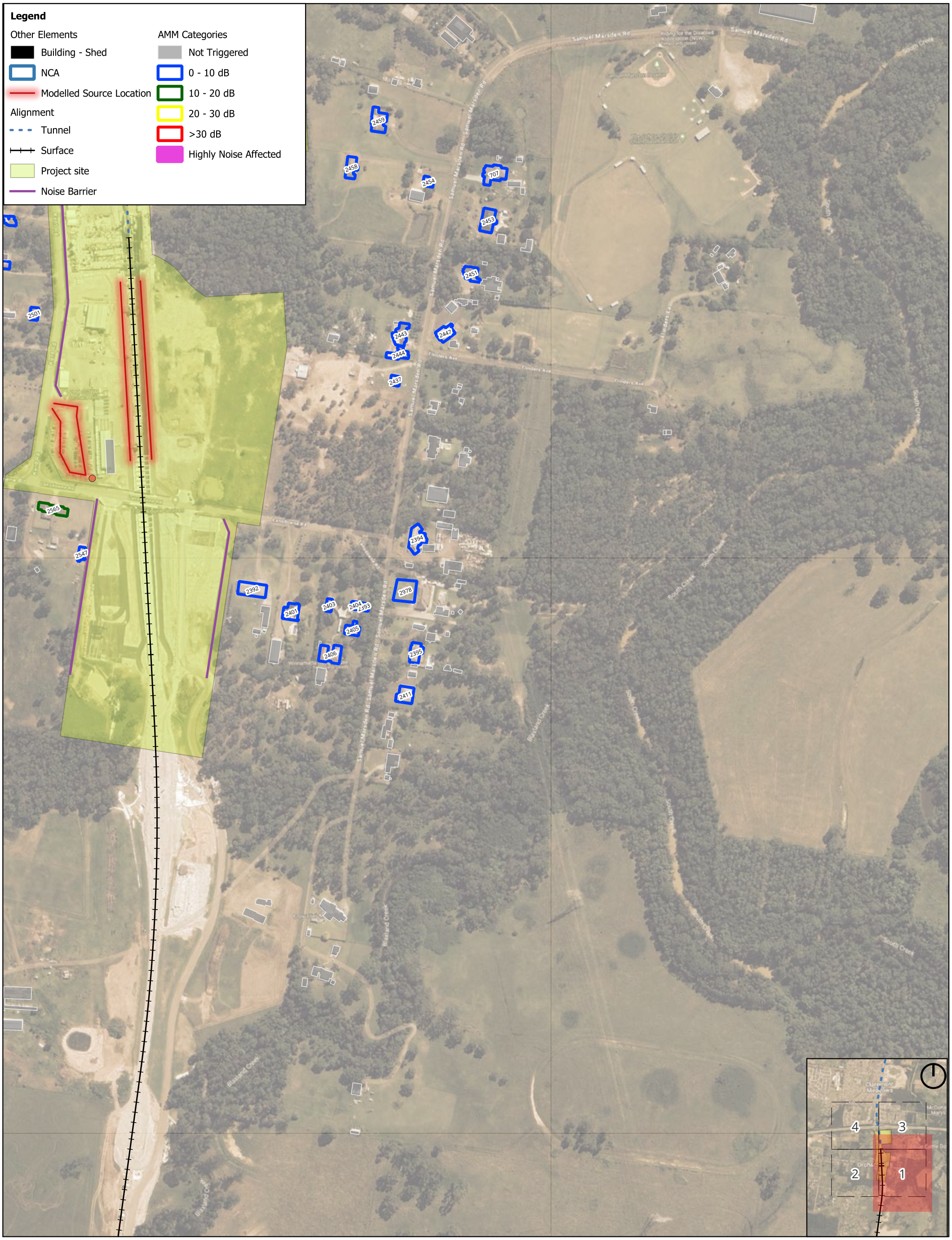
- Building - Shed
- NCA
- Modelled Source Location

Alignment

- Tunnel
- Surface
- Project site
- Noise Barrier

AMM Categories

- Not Triggered
- 0 - 10 dB
- 10 - 20 dB
- 20 - 30 dB
- >30 dB
- Highly Noise Affected



Project No.:	21239.1
Date:	05/06/2024
Drawn by:	MS
Scale:	1:4,500
Sheet Size:	@A4
Projection:	GDA94 / MGA zone 56

0 100 200 m

SSTOM: Orchard Hills Batch Plant and Concreting OOH

Construction Airborne Noise Assessment
Additional Mitigation Measures

Assessment Scenario: S5 (Evening)

VMS AUSTRALIA
T: 1800 867 000
E: info@vms.com.au
www.vms.com.au

Legend

Other Elements

- Building - Shed
- NCA
- Modelled Source Location

Alignment

- Tunnel
- Surface
- Project site
- Noise Barrier

AMM Categories

- Not Triggered
- 0 - 10 dB
- 10 - 20 dB
- 20 - 30 dB
- >30 dB
- Highly Noise Affected

Project No.:	21239.1
Date:	05/06/2024
Drawn by:	MS
Scale:	1:4,500
Sheet Size:	@A4
Projection:	GDA94 / MGA zone 56

0 100 200 m

SSTOM: Orchard Hills Batch Plant and Concreting OOH

Construction Airborne Noise Assessment
Additional Mitigation Measures

Assessment Scenario: S5 (Evening)

VMS AUSTRALIA
T: 1800 867 000
E: info@vms.com.au
www.vms.com.au

Legend

Other Elements

- Building - Shed
- NCA
- Modelled Source Location

Alignment

- Tunnel
- Surface
- Project site
- Noise Barrier

AMM Categories

- Not Triggered
- 0 - 10 dB
- 10 - 20 dB
- 20 - 30 dB
- >30 dB
- Highly Noise Affected

Project No.:	21239.1
Date:	05/06/2024
Drawn by:	MS
Scale:	1:4,500
Sheet Size:	@A4
Projection:	GDA94 / MGA zone 56

0 100 200 m

SSTOM: Orchard Hills Batch Plant and Concreting OOH

Construction Airborne Noise Assessment
Additional Mitigation Measures

Assessment Scenario: S5 (Evening)

VMS AUSTRALIA
T: 1800 867 000
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www.vms.com.au

Legend

Other Elements

- Building - Shed
- NCA
- Modelled Source Location

Alignment

- Tunnel
- Surface
- Project site
- Noise Barrier

AMM Categories

- Not Triggered
- 0 - 10 dB
- 10 - 20 dB
- 20 - 30 dB
- >30 dB
- Highly Noise Affected

Project No.:	21239.1
Date:	05/06/2024
Drawn by:	MS
Scale:	1:4,500
Sheet Size:	@A4
Projection:	GDA94 / MGA zone 56

0 100 200 m

SSTOM: Orchard Hills Batch Plant and Concreting OOH

Construction Airborne Noise Assessment
Additional Mitigation Measures

Assessment Scenario: S5 (Evening)

VMS AUSTRALIA
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www.vms.com.au

Appendix D

Receivers with Predicted Exceedance of NMLs Requiring Additional Mitigation Measures

21239.1.10

Building ID	Usage	NCA	Predicted Noise Levels Where Construction NMLs are Exceeded and AMM Category, dBA																				
			AMM Category 0 to 10 dB					AMM Category 10 to 20 dB					AMM Category 20 to 30 dB					AMM Category >30 dB				
			N	E	DOOH	DOOH	E	N	E	DOOH	DOOH	E	N	E	DOOH	DOOH	E	N	E	DOOH	DOOH	E
			S1	S2	S3	S4	S5	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
707	NCA08	RES	47	53	53	51	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
828	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
921	NCA06	RES	-	42	43	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
922	NCA06	RES	-	43	43	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
923	NCA06	RES	40	47	48	47	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
929	NCA06	RES	-	43	43	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
930	NCA06	RES	-	45	46	45	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
931	NCA06	RES	40	47	48	46	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
969	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
970	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1067	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1068	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1074	NCA06	RES	-	40	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1075	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1078	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1079	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1081	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1088	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1090	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1137	NCA06	RES	-	38	-	-	37	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1269	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1281	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1353	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1354	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1357	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1361	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1362	NCA06	RES	-	40	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1364	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1365	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1366	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1367	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1370	NCA06	RES	-	40	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1371	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1372	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1381	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1382	NCA06	RES	-	39	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1387	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1389	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1393	NCA06	RES	-	40	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1394	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1395	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1396	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1399	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1400	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1407	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1408	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1409	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1413	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1415	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1416	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1417	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1418	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1421	NCA06	RES	-	39	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1422	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1423	NCA06	RES	-	40	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1424	NCA06	RES	-	39	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1425	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1427	NCA06	RES	-	39	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1429	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1430	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1432	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2392	NCA08	RES	51	56	57	54	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2393	NCA08	RES	46	56	56	56	56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2394	NCA08	RES	-	51	51	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2395	NCA08	RES	-	52	53	52	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Res = Residential Receiver Type

Building ID	Usage	NCA	Predicted Noise Levels Where Construction NMLs are Exceeded and AMM Category, dBA																				
			AMM Category 0 to 10 dB					AMM Category 10 to 20 dB					AMM Category 20 to 30 dB					AMM Category >30 dB				
			N	E	DOOH	DOOH	E	N	E	DOOH	DOOH	E	N	E	DOOH	DOOH	E	N	E	DOOH	DOOH	E
			S1	S2	S3	S4	S5	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
2401	NCA08	RES	50	58	58	57	57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2403	NCA08	RES	46	56	56	56	56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2404	NCA08	RES	46	56	56	56	56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2405	NCA08	RES	46	55	55	55	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2406	NCA08	RES	-	54	55	54	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2411	NCA08	RES	-	52	52	52	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2429	NCA08	RES	-	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2430	NCA08	RES	-	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2437	NCA08	RES	47	52	52	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2443	NCA08	RES	47	54	55	54	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2444	NCA08	RES	47	56	56	56	56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2447	NCA08	RES	-	52	52	52	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2451	NCA08	RES	49	56	56	55	55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2453	NCA08	RES	47	54	54	53	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2454	NCA08	RES	46	54	54	53	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2458	NCA08	RES	51	57	57	56	56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2459	NCA08	RES	48	54	55	54	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2473	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2474	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2475	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2477	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2478	NCA06	RES	-	42	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2480	NCA06	RES	39	-	50	50	-	-	-	-	-	50	-	-	-	-	-	-	-	-	-	-
2481	NCA06	RES	-	45	45	44	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2482	NCA06	RES	-	40	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2484	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2486	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2498	NCA08	RES	-	51	51	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2501	NCA08	RES	-	57	57	57	57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2503	NCA08	RES	-	53	53	52	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2509	NCA08	RES	-	53	53	53	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2515	NCA08	RES	-	52	52	52	52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2519	NCA08	RES	-	52	52	51	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2520	NCA08	RES	-	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2531	NCA08	RES	-	53	53	53	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2532	NCA08	RES	-	54	54	54	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2535	NCA08	RES	-	55	55	54	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2539	NCA08	RES	-	56	56	56	56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2547	NCA08	RES	51	58	58	58	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2558	NCA08	RES	50	-	-	-	-	-	-	63	63	63	-	-	-	-	-	-	-	-	-	-
2565	NCA08	RES	-	-	-	-	-	56	56	64	63	63	-	-	-	-	-	-	-	-	-	-
2567	NCA08	RES	51	-	-	-	-	-	-	62	62	62	-	-	-	-	-	-	-	-	-	-
2569	NCA08	RES	48	58	58	58	58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2573	NCA08	RES	-	56	56	56	56	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2577	NCA08	RES	-	52	52	51	51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2580	NCA08	RES	-	50	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2585	NCA08	RES	-	54	54	54	54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2603	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2618	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2619	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2622	NCA06	RES	-	39	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2629	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2630	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2632	NCA06	RES	-	40	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2633	NCA06	RES	-	40	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2636	NCA06	RES	-	39	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2637	NCA06	RES	-	42	-	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2638	NCA06	RES	-	40	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2639	NCA06	RES	-	40	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2640	NCA06	RES	-	40	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2641	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2643	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2644	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2645	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2646	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Building ID	Usage	NCA	Predicted Noise Levels Where Construction NMLs are Exceeded and AMM Category, dBA																				
			AMM Category 0 to 10 dB					AMM Category 10 to 20 dB					AMM Category 20 to 30 dB					AMM Category >30 dB				
			N	E	DOOH	DOOH	E	N	E	DOOH	DOOH	E	N	E	DOOH	DOOH	E	N	E	DOOH	DOOH	E
			S1	S2	S3	S4	S5	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
2675	NCA06	RES	-	39	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2677	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2680	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2685	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2686	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2687	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2690	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2692	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2693	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2705	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2708	NCA06	RES	-	39	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2713	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2736	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2740	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2771	NCA06	RES	-	43	44	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2773	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2776	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2780	NCA06	RES	-	42	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2781	NCA06	RES	-	43	43	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2782	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2783	NCA06	RES	-	43	43	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2785	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2786	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2787	NCA06	RES	-	40	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2788	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2789	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2793	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2794	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2795	NCA06	RES	-	40	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2796	NCA06	RES	-	41	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2797	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2798	NCA06	RES	-	43	43	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2802	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2803	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2804	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2806	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2807	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2809	NCA06	RES	-	40	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2810	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2811	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2812	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2813	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2819	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2821	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2823	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2826	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2828	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2832	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2835	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2836	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2837	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2838	NCA06	RES	-	40	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2839	NCA06	RES	-	42	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2841	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2843	NCA06	RES	-	39	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2844	NCA06	RES	-	39	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2848	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2849	NCA06	RES	-	42	43	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2850	NCA06	RES	-	43	43	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2851	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2852	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2853	NCA06	RES	-	39	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2854	NCA06	RES	-	40	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2855	NCA06	RES	-	43	43	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2856	NCA06	RES	-	44	44	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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			N	E	DOOH	DOOH	E	N	E	DOOH	DOOH	E	N	E	DOOH	DOOH	E	N	E	DOOH	DOOH	E
			S1	S2	S3	S4	S5	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
2857	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2858	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2859	NCA06	RES	-	42	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2863	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2864	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2865	NCA06	RES	-	42	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2867	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2868	NCA06	RES	-	43	43	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2870	NCA06	RES	-	42	43	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2871	NCA06	RES	-	43	43	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2872	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2873	NCA06	RES	-	43	43	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2874	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2875	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2876	NCA06	RES	38	46	47	46	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2877	NCA06	RES	-	43	44	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2878	NCA06	RES	-	43	44	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2879	NCA06	RES	39	44	44	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2880	NCA06	RES	-	44	44	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2881	NCA06	RES	38	44	44	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2882	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2886	NCA06	RES	-	42	43	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2887	NCA06	RES	40	-	48	47	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2888	NCA06	RES	42	-	49	47	-	-	-	-	-	47	-	-	-	-	-	-	-	-	-	-
2889	NCA06	RES	41	-	49	47	-	-	-	-	-	47	-	-	-	-	-	-	-	-	-	-
2900	NCA06	RES	41	-	48	48	-	-	-	-	-	48	-	-	-	-	-	-	-	-	-	-
2902	NCA06	RES	44	-	50	48	-	-	-	-	-	48	-	-	-	-	-	-	-	-	-	-
2903	NCA06	RES	43	-	51	50	-	-	-	-	-	50	-	-	-	-	-	-	-	-	-	-
2904	NCA06	RES	42	-	49	49	-	-	-	-	-	49	-	-	-	-	-	-	-	-	-	-
2905	NCA06	RES	43	-	49	48	-	-	-	-	-	48	-	-	-	-	-	-	-	-	-	-
2906	NCA06	RES	42	-	49	48	-	-	-	-	-	48	-	-	-	-	-	-	-	-	-	-
2907	NCA06	RES	42	-	49	49	-	-	-	-	-	49	-	-	-	-	-	-	-	-	-	-
2908	NCA06	RES	42	-	50	48	-	-	-	-	-	48	-	-	-	-	-	-	-	-	-	-
2909	NCA06	RES	42	-	50	49	-	-	-	-	-	49	-	-	-	-	-	-	-	-	-	-
2918	NCA06	RES	42	-	50	49	-	-	-	-	-	49	-	-	-	-	-	-	-	-	-	-
2919	NCA06	RES	38	44	45	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2920	NCA06	RES	38	44	44	44	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2921	NCA06	RES	40	46	46	46	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2922	NCA06	RES	-	47	47	46	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2923	NCA06	RES	38	42	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2924	NCA06	RES	-	42	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2925	NCA06	RES	-	42	-	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2926	NCA06	RES	-	43	43	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2927	NCA06	RES	39	43	44	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2928	NCA06	RES	38	46	46	45	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2929	NCA06	RES	38	44	45	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2930	NCA06	RES	39	44	44	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2931	NCA06	RES	38	45	45	45	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2933	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2934	NCA06	RES	-	44	44	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2935	NCA06	RES	38	43	43	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2936	NCA06	RES	-	43	43	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2937	NCA06	RES	-	42	-	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2940	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2941	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2942	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2943	NCA06	RES	-	43	43	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2944	NCA06	RES	-	42	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2945	NCA06	RES	-	39	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2946	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2947	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2948	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2949	NCA06	RES	-	42	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2950	NCA06	RES	-	42	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2952	NCA06	RES	-	41	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note: Res = Residential Receiver Type

Building ID	Usage	NCA	Predicted Noise Levels Where Construction NMLs are Exceeded and AMM Category, dBA																				
			AMM Category 0 to 10 dB					AMM Category 10 to 20 dB					AMM Category 20 to 30 dB					AMM Category >30 dB				
			N	E	DOOH	DOOH	E	N	E	DOOH	DOOH	E	N	E	DOOH	DOOH	E	N	E	DOOH	DOOH	E
			S1	S2	S3	S4	S5	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
2954	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2956	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2961	NCA06	RES	-	42	-	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2962	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2965	NCA06	RES	-	40	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2966	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2967	NCA06	RES	-	39	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2977	NCA06	RES	38	46	46	45	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2978	NCA08	RES	-	54	54	53	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2982	NCA08	RES	-	53	53	53	53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12016	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12018	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12019	NCA06	RES	-	42	-	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12020	NCA06	RES	-	42	-	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12021	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12022	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12023	NCA06	RES	-	39	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12024	NCA06	RES	-	39	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12025	NCA06	RES	-	42	-	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12026	NCA06	RES	-	43	43	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12027	NCA06	RES	-	43	43	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12028	NCA06	RES	-	42	43	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12029	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12030	NCA06	RES	-	45	45	45	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12031	NCA06	RES	-	45	45	45	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12032	NCA06	RES	-	45	45	44	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12033	NCA06	RES	-	44	44	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12034	NCA06	RES	-	44	44	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12035	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12036	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12037	NCA06	RES	-	45	45	45	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12038	NCA06	RES	39	-	48	48	-	-	-	-	-	48	-	-	-	-	-	-	-	-	-	-
12039	NCA06	RES	38	-	48	47	47	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12040	NCA06	RES	-	47	47	46	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12041	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12042	NCA06	RES	-	46	46	45	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12043	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12044	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12045	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12046	NCA06	RES	-	39	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12047	NCA06	RES	-	40	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12048	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12049	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12050	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12051	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12052	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12053	NCA06	RES	-	39	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12054	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12055	NCA06	RES	-	42	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12056	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12057	NCA06	RES	-	40	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12059	NCA06	RES	-	40	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12060	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12061	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12062	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12063	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12064	NCA06	RES	-	39	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12066	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12068	NCA06	RES	41	-	49	48	-	-	-	-	-	48	-	-	-	-	-	-	-	-	-	-
12069	NCA06	RES	41	-	49	49	-	-	-	-	-	49	-	-	-	-	-	-	-	-	-	-
12070	NCA06	RES	42	-	50	49	-	-	-	-	-	49	-	-	-	-	-	-	-	-	-	-
12071	NCA06	RES	41	-	49	48	-	-	-	-	-	48	-	-	-	-	-	-	-	-	-	-
12072	NCA06	RES	38	46	46	46	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12073	NCA06	RES	-	44	44	44	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12074	NCA06	RES	-	42	-	-	42	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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			S1	S2	S3	S4	S5	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5	S1	S2	S3	S4	S5
12076	NCA06	RES	-	40	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12077	NCA06	RES	-	42	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12078	NCA06	RES	-	40	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12079	NCA06	RES	-	41	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12081	NCA06	RES	-	40	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12083	NCA06	RES	-	39	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12085	NCA06	RES	-	38	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12086	NCA06	RES	-	39	-	-	39	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12088	NCA06	RES	40	47	47	46	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12089	NCA06	RES	-	45	45	45	45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12090	NCA06	RES	-	45	45	44	44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12091	NCA06	RES	-	44	44	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12092	NCA06	RES	-	42	-	-	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12093	NCA06	RES	-	41	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12094	NCA06	RES	-	40	-	-	38	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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